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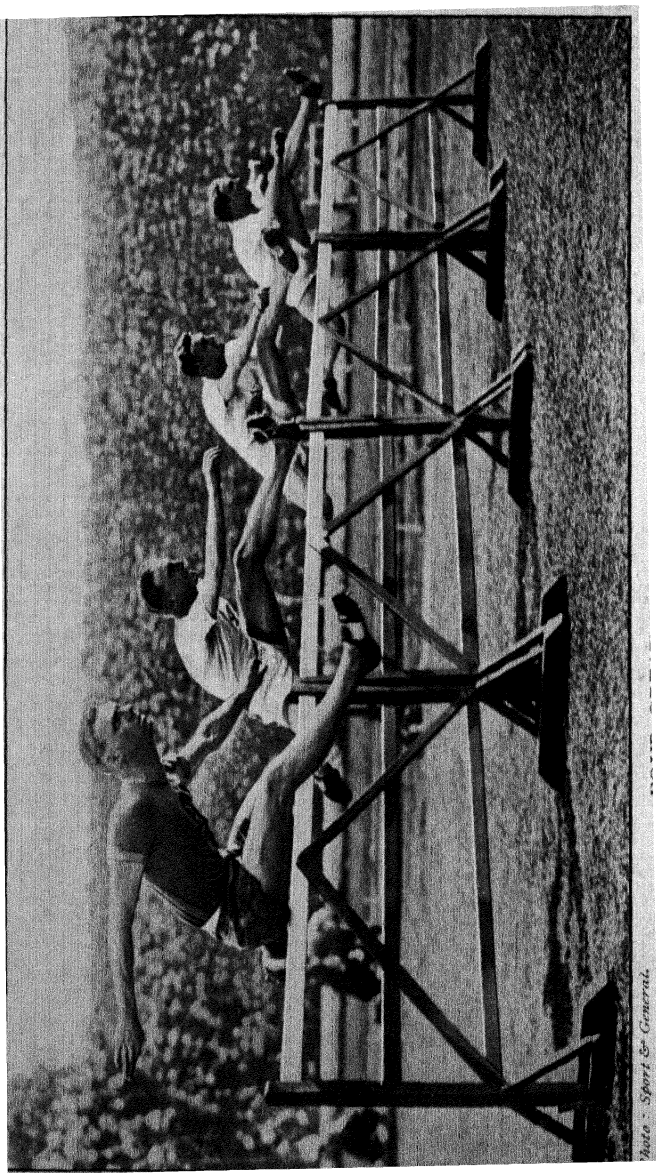


Photo - Sport & General

FOUR GREAT EMPIRE HURDLERS

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ATHLETICS

BY

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(PRESIDENT, C.U.A.C., 1924-25)

AND

A. E. PORRITT

(PRESIDENT, O.U.A.C., 1925-26)

WITH ILLUSTRATIONS

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TO THE
UNIVERSITY ATHLETIC CLUBS
OF
OXFORD AND CAMBRIDGE
THE AUTHORS
ARE PERMITTED TO DEDICATE THIS BOOK;
AND THEY DO SO
IN GRATEFUL REMEMBRANCE
OF THE PRIVILEGE OF THEIR MEMBERSHIP

PREFACE

THE appearance of yet another contribution to the literature of Athletics seems to call for some explanation in a decade which has witnessed a considerable output of works on that subject. Simply to have written another text-book on some particular branches of the sport would merit criticism; but we venture to think that a comprehensive study of the whole subject is sufficiently original and desirable to justify the present volume.

Among all the modern books on Athletics there exists none, as far as we are aware, which treats of the sport from every angle. It has been our aim to present, in a way which has not been attempted since Sir Montague Shearman's classic in the 'eighties, a complete study not only of the technical side of Athletics, including its application to women and boys, but also of its history and records. With this object in view the scope of the present work falls within two main categories. In the first, we have thought fit to relate the historical development of the sport throughout the world, treating such important topics as the Olympic Games and International Athletics as distinct phases. In the second, we have dealt at length with the technique of the sport, and we have rendered each section, whether on running, jumping or throwing, as authoritative as possible.

It is quite evident, of course, that no two authors, however experienced or versatile, could write with personal knowledge of all the many and widely diverse events which comprise an athletic sports programme. To overcome this difficulty we sought and obtained assistance. It has been our great good fortune to secure the collaboration of two experts in some of the most technical subjects of which we had to treat. Mr. C. T. Van Geyzel, holder of the Cambridge High Jump

Record and A.A.A. Champion in 1926, has contributed the chapter on this event ; and the throwing events have been dealt with as a whole by Mr. M. C. Nokes, four times A.A.A. Champion (1923-6) in Throwing the Hammer and third in the 1924 Olympic Games.

Furthermore, we have to acknowledge our great indebtedness to Mr. H. M. Abrahams, who most kindly read the original typescript and out of his wide experience offered us much valuable criticism ; to many secretaries of foreign athletic associations who corrected the relevant lists of records ; and to the *Sport and General* for the photographs from which are reproduced many of the drawings in this book.

These drawings have been deliberately used instead of photographs in order better to elucidate the text. They are line drawings composed from actual photographs, and only the essentials of the particular movement illustrated are reproduced. They are meant, in fact, to be purely instructive. They combine strict accuracy with the excision of all that unnecessary detail which so often prevents concentration when studying photographs in conjunction with the text ; and we hope that their utility will compensate for the absence from this volume of a more attractive form of illustration.

Finally, at the end of the book will be found the inevitable list of records, and we have added a few comparative tables which we hope will not be without interest. At the same time we have endeavoured to reduce this record list to the minimum size, believing that no one save the specialist or record fiend desires complete and complicated tables. For a similar reason we have not printed any laws or regulations except where they are quoted in the text as being relevant to the subject there dealt with : anyone requiring these can, of course, obtain them *in extenso* from the various Amateur Athletic Associations.

D. G. A. L.

A. E. P.

LONDON, *March* 1929.

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FOUR GREAT EMPIRE HURDLERS	<i>Frontispiece</i>
<i>From a photograph by "Sport and General"</i>	

CHAPTER I

THE HISTORY OF ATHLETICS

ONE of the primary instincts of man is to play; and historians and sociologists early seek out and observe among the customs of peoples their methods of recreation, from which in many cases may be understood much of their psychology and culture. Games, in fact, not only mould national character, which is the *raison d'être* for their prominence in modern school curricula; they reflect it. Among primitive peoples there exist scant records of the games in which they indulged; but one finds that the pursuit of athletics in olden days was closely allied with either religion or military exercises, and it seems probable that sports were of a distinctly utilitarian nature.

It is not irrational to presume, however, that besides exercises of a martial order, men cultivated from the earliest times the natural sports of running, leaping and throwing, wrestling and fighting, often with no ulterior object, unless it were, perhaps, a desire for physical fitness or for the favour of a maid. Indeed, the simple delight of a man in his own strength and the popular love of mankind for the sight of physical combat may be considered sufficient reason for the practice of games, even among the races of antiquity. And since it was early found possible to divert the human passion for recreation into the profitable channels of militarism, it is not surprising that their practice was encouraged by those responsible for good government.

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Section 1.—Ancient

The earliest extant records relate to the Táiltean Games, founded in Ireland about 3000 B.C. by Luguid of the Strong Arm in memory of his beautiful foster-mother, the Queen Táilte; and one may observe in passing that these games were successfully revived in 1924. In the absence of authoritative descriptions, one can only conjecture that the contests were of a simple character, designed to foster the warlike spirit of those dark and distant days; probably hunting, running, wrestling and spear-throwing were the principal sports practised by the ancient Hibernians.

Possessing less antiquity but possibly more authenticity than these somewhat legendary games are the sports of Egypt and of Asia, although according to Herodotus only one portion of Egypt subscribed to athletic exercises. This was at Chemnis, where there was a temple of Perseus, who was said to have instituted public games in his honour after the manner of the Greeks. The popularity of games in the Near East is, perhaps, evidenced by the frequent references thereto in the Old Testament, both Isaiah and Jeremiah employing athletic similes in their writings with great effect. To the Lydians are attributed the majority of games, such as dice and ball; and coming to later times there are records of athletic games about A.D. 600 forming part of the annual fair of Okad, in Arabia. The interest of these ancient games is not in any case particular; they are significant as being probably the prototype of the athletic exercises of ancient Greece, which culminated in the Olympic Games.

The public games of Greece consisted in athletic contests and carnivals, which generally formed part of a religious observance. Their influence upon the national character and upon the development of art and literature can scarcely be exaggerated. Not only was it deemed fitting that the noblest youths should be trained to

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compete, but the brilliance of the sculptor and the poet was also employed to commemorate in stone or verse the physical and intellectual beauty of the contestants. Moreover, as will be more fully explained in a later chapter, these games became a focus in the national life, providing a common meeting-place for every member of the Greek race, and affording annual periods of peace and security.

The earliest games in Greece of which there is any trustworthy record are those held at the funeral of Patroclus, described in the 23rd Book of the *Iliad*. Probably dating back to 1100 B.C., they testify quite definitely to the intimate connection of early games with religion ; and they reveal the already definite nature of the programme, which included foot and chariot-racing, boxing, wrestling and weight-putting.

The subsequent history of the games is obscure until about 884 B.C., when the games at Olympia, in the plain of Elis, were reorganised. Thucydides (v. 59) attributes their restoration to Iphitus, the chronicle running that on inquiry of the oracle that monarch was advised to restore the games in order to stamp out the dissensions by which the country was then torn. In the fulfilment of the oracle's command the Eleians were strongly supported by the Spartans, and there is some reason to suppose that the institution of the sacred truce during the period of the Olympic Games was inspired by the great Spartan lawgiver, Lycurgus. Whether this be so or not, Lycurgus included games in his political system, and even provided athletic contests for the young women of Sparta.

In 776 B.C. the Eleians named the games after Corœbus, winner in the foot-race, which was 192 yards long ; and thenceforward the victor in this event gave his name to the Olympiad.

Participation in the games was confined to males of Hellenic descent who were under the age of thirty-five ; and women were forbidden even as spectators. It is

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true that at Olympia women were permitted to own teams of chariot horses ; but all other participation was denied them, except in the case of the special games in honour of Hera, in which the Eleian virgins contended. On the other hand, the Spartans encouraged athletic contests for maidens ; but unfortunately the result was an increased laxity of manners and morals.

In the course of time the games considerably extended their scope, and competitors ultimately came from all the provinces of Greece, even from Cyrene and Marseilles. The local festival thus became converted into a bond of union for all the Hellenic race, and attained an importance sufficient to sustain it until abolished by Theodosius in the year A.D. 394.

A more complete description of the games is deferred to a later chapter, and it is sufficient here to mention the idealism which underlay the Greek conception of athletics, and which so largely accounts for their significance in the development of the character and culture of that race, and to indicate the forms of sport which they pursued, as leading up to more modern times.

Despite the caustic comments of men like Euripides and Thucydides, who rightly perceived the folly of exaggerating the importance of victory in the games—a habit to which the later Greeks of all classes were unfortunately prone, even as are modern athletic “fans”—there was a profound truth underlying the idea that “the body of man has a glory as well as his intellect and spirit ; that body and mind should alike be disciplined ; and that it is by the harmonious discipline of both that men best honour Zeus.” Not only do they honour Zeus by self-discipline, they learn also the right to be free and to rule. Upon this ideal of the perfect man was raised another, that of the free self-governing community ; and thus the Greeks employed games to advance their culture and their polity.

For the early Olympiads the *dromos*, or one lap of the stadium, a distance of 192 yards, was the only foot-

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race. It was supplemented in the Fourteenth Olympiad by the *diaulos*, or two laps ; and in the Fifteenth by the *dolichos*, about $2\frac{2}{3}$ miles. Wrestling was introduced in the Eighteenth Olympiad, and the *pentathlon* also, which consisted of leaping, discus and javelin-throwing, running and wrestling. In boxing, the use of the *cæstus*, or leather thong bound round the fist, marked the chief difference from modern practice ; and even this form of attack was prohibited in the chief event of all, the *pankraton*, a combination of boxing and wrestling. The chariot-race, which became so prominent a feature of the later Roman displays, originated in the Twenty-third Olympiad, and was held in the hippodrome. And there were also athletic contests of the same variety for boys.

Although the Olympic Games were the oldest and most important athletic contests in ancient Greece, they were not unrivalled in other parts of the peninsula. The Pythian Games, held every fourth year at Delphi in honour of Apollo, date at least from the year 527 B.C. The Nemean Games, in honour of Zeus, originated in 516 B.C. and were biennial, as were also the Isthmian Games, held on the Isthmus of Corinth, and dating from 523 B.C. The importance of the last is evidenced by the law of Solon, which awarded 100 drachmæ to every Athenian victor ; and their continued popularity in Christian times is demonstrated by the frequent similes of St. Paul, notably the famous description of training and racing in 1 Cor. ix. 24-27, which was probably written from Ephesus about A.D. 57. And as throwing further light on the scrupulously fair conduct of the games, one may cite the passage in 2 Tim. ii. 5, "If a man also strive for masteries, yet is he not crowned, except he strive lawfully."

One must not omit to mention the oldest Athenian festival, the Panathenæa. Originally a religious celebration in honour of Athene, it was extended and ennobled by the conception of Theseus, who, having

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effected the civil union of Attica, judged that only by a religious union of all the peoples who regarded themselves as under the protection of Athene could this homogeneity be cemented. Subsequently, Peisistratus made considerable alterations; the festival was made quadrennial in order to rival the Olympiads; and peculiar contests were arranged. The most interesting to the athlete was the Lampadedromia, or torch-race at night, the precursor of the modern relay race, whose praise is justly sung in a well-known line in Æschylus, "The first is the victor, even though he be last in the running." It is understood that it is intended to revive this festival in 1930.

Curiously enough, the Ludi Publici of the Romans bear little relation to athletic contests such as form the subject of this book, and they compare most unfavourably with those of the Greeks. The Roman populace was fed upon two things, bread and the circus; and it was the thrill of the chariot-race and its accompanying wagers, the love of prodigal display, and later the sensuality attached to the gladiatorial and other combats, which pandered to the degraded taste of the crowd.

One has only to read the pages of Gibbon (*Decline and Fall of the Roman Empire*, ii. 333; iii. 44) to appreciate their attitude. He points out (iii. 44) the difference in the games of antiquity. "The most eminent of the Greeks were actors, the Romans were merely spectators." Professional charioteers, professional athletes, took the place of the high-born competitors of Greece. True, there had been professionals in Greece as early as the fifth century B.C., recruited from the lower orders and pursuing athletics as a means of livelihood; and this complete abandonment, with its deleterious effect upon the mind, had been not unreasonably attacked by Xenophanes and by Euripides in a fragment of the *Autolycus*, which approximates in meaning to Kipling's "muddled oafs and flannelled fools." But what the Greeks admitted to be regrettable the Romans un-

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fortunately admired as an ideal ; and the gladiator was as a demi-god.

Among the Romans, athletic contests doubtless took place from the earliest times. At one period the habit of swimming, running, riding and javelin-throwing was practised by the Roman youth on the Field of Mars ; and both the Actian Games, founded 28 B.C., and held at Rome every four years, and the Imperial Games at Naples, founded to commemorate the visit of Augustus in A.D. 14, were celebrated for a time in the same fashion as the Olympic Games. The Secular Games, contested every hundred years, followed similar lines ; but apart from efforts such as those of Augustus to keep women away from the brutal boxing matches by ordinance, little was done to prevent the gradual lowering of the public taste. Wrestling, so popular among the Greeks, was rare ; the introduction of Greek professional runners, which according to Livy occurred about 186 B.C., was ultimately to provide the *coup de grâce* to pure athletics in Rome. Their popularity increased after the institution of the Actian Games, and their guilds ranked above those of the gladiators ; but the profession was derogatory to a Roman, and ere long the sport sank into the slough of general athletic degeneracy.

Section 2.—Mediæval

Turning to Western Europe, it is perhaps not surprising to find, among the relatively uncivilised peoples of Gaul and Britain, that early athletic contests, even as had been the case in Greece, were directed mainly towards practical ends. Feats of arms, jousts and tournaments, archery and exercises with the sword and rapier, formed the principal recreations, as distinct from the chase, in mediæval times.

No doubt the original Celtic inhabitants of Britain were an athletic race, and reference has already been made to the Tãiltean Games, which were maintained in

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Ireland for many centuries. Although these and other similar games disappeared under the stress of perpetual civil war, the Irish ever remained fond of field sports, and since the revival of organised athletics in the nineteenth century their representatives have competed with remarkable success, both in Britain and America. The Gaelic people also delighted in feats of strength and skill, and the Highland Games are of considerable antiquity.

In Central Europe the Teutons also showed partiality for games, and mediæval literature is full of descriptions of athletic prowess. The well-known story in the *Nibelungenlied* (circa A.D. 1200, see Adventure 7, lines 1839 ff.) of how Siegfried, by means of his invisible mantle, aided King Gunther to win Queen Brunhilde for his bride, relates that the queen imposed three trials of strength upon each suitor, death being the penalty for defeat by her in any of the contests. The three tests, to give them their modern nomenclature, were throwing the javelin, putting the weight and long jumping ; and only Siegfried's super-excellence defeated this Amazonian maid, who showed her strength on her wedding night by trussing her husband and suspending him from a nail !

This saga has an additional interest, inasmuch as it typifies the mediæval tendency to record the athletic achievements of princes and nobility and to omit reference to those of the people. This reverence for the skill of kings and knights occasions difficulty to the modern historian who seeks to trace the evolution of athletics ; not only are the records rare, but they not infrequently bear the mark of flattering hyperbole. Thus, for example, the statement of Jusserand that Guillaume le Maréchal, a French knight of the thirteenth century, held the world's record for putting the weight, and that of Peacham that Achmet III, Sultan of Turkey about A.D. 1700, held the record for throwing the discus, are of interest as indicating the practice of the

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event rather than of utility as authentic records ; whilst the description of Henry V of England, that he “ was so swift a runner that he and two of his lords, without bow or other engine, would take a wild buck in a large park,” would appear to be a considerable exaggeration of the prowess even of that warrior king !

Having uttered this warning against treating the chronicles without due reserve, one turns to the recreations of Norman England and finds that the chase and the tournament were the principal diversions of the nobility, and that little is recorded of the sports of the common folk, save archery. Wrestling was certainly the national pastime in the time of John, and again under Henry VII ; and at another period Edward III had to prohibit weight-putting by statute, so seriously did it interfere with the practice of archery. The sister sport, hammer-throwing—or, as it was then called, “ casting the barre ”—continued to be popular ; and Henry VIII is said to have been a world’s record-holder at this event. Under so athletic a monarch—he was proficient in throwing the javelin, introduced tennis into England, and did he not wrestle with and undiplomatically throw Francis I at the Field of the Cloth of Gold ?—quite an athletic revival occurred ; and a school of thought arose which advocated athletics, including running, as a valuable adjunct to education.

This was the case not only in England, but also on the Continent. For example, Rabelais in his great classic (*Livre I*, ch. 23), in describing the course of instruction laid down for the youthful Gargantua, insists upon the benefit to be derived from physical culture, and makes his hero fence, tilt, hunt, ride, swim, climb, play tennis and football, run, leap so as to clear a ditch or hedge, as being useful in war, throw the hammer, weight, javelin and spear, regardless of the difficulty of teaching him proficiency in such a diversity of sports. And 250 years later, in 1762, another famous French educationalist, Jean Jacques Rousseau, devotes a chapter in

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the second book of his *Émile* to the "Utilité de la course," and encourages indolent children to race for sweet cakes.

At an earlier time running had been a popular pleasure with monarchs and nobles, and the exploits of Henry V have been noted. Strutt records in his *Sports and Pastimes of the People of England* that the young men of good family were taught running, leaping and wrestling, besides the less plebeian joust; and Shakespeare has various allusions to running and to the Olympic Games (see, e.g., 3 *Henry VI*, 2, iii.).

In the sixteenth century a series of foot-races was substituted for the great football match played annually at Chester between the Shoemakers and the Drapers; and although during the Elizabethan age only the common people seemed keen on sports, the nobility showing a preference for pageants, yet in the following era the Stuart kings were warm patrons of athletic games of all kinds. James I, indeed, as was not uncommon with him, wrote a treatise (*Basilikon Doron*) on the subject for his son, in which he recommended him to practise "running, leaping, wrestling, fencing, dancing and playing at the catch or tennise, archerie, palle-malle, and such-like other fair and pleasant field games." And as an off-set to the contemporary statutes against gaming, the same monarch caused the so-called *Book of Sports* to be read in churches, whereby leaping and vaulting on Sunday after service were permitted.

Both Pepys and Macaulay mention races for wagers under Charles II, and during the eighteenth and nineteenth centuries professional matches and races for wagers were prevalent in England. Amateur contests then began to seize the imagination of all ranks of society, in origin undoubtedly merely an imitation of the professional matches. Nevertheless, it is probably due to them that in the middle of the nineteenth century there was a renaissance of amateur athletics throughout the country, which, preceding as it did all

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other European athletic movements, gave Great Britain that pre-eminence in athletics which no country, with the possible exception of America, was capable of challenging until the institution of the modern Olympic Games. Since the dawn of the twentieth century, athletic sports, always pursued but never previously so generally popular, have been adopted with ever-increasing enthusiasm upon the continent of Europe; and the result to-day is the disappearance of British supremacy, but not, as some Jeremiahs pretend, decadence and loss of all prestige. British sportsmanship is recognised as paramount; and England is still regarded, even by the latest recruits to organised athletics—the German people—as “Das Mutterland des Sports.”

Section 3.—Modern

About 1812 the R.M.C. at Sandhurst inaugurated regular athletic sports, and some thirty years later the R.M.A. Woolwich, Eton, Harrow, Rugby and Shrewsbury followed the example. Not until 1850 did Exeter College, Oxford, hold the first organised sports meeting at the Universities, a successful venture subsequently adopted by the other colleges. Cambridge founded their University sports in 1857, and Oxford three years later. Thus by 1860 athletic meetings had become a regular feature of school and college life, and during a single decade amateur athletics had received an impetus from which they never looked back.

In 1864 the first Oxford *v.* Cambridge Sports took place at Oxford, the programme consisting of eight events, of which each side won four; and in 1867 the venue was transferred to London, where it has since remained. In the same year (1864) the Civil Service inaugurated their annual meeting; and in 1863 a group of business men engaged in the neighbourhood of Mincing Lane, London, founded a club which they

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named after that commercial centre, and which, three years later, took the title of the London Athletic Club.

In 1866, when athletics had become generally popular, the Amateur Athletic Club was formed in London for "gentlemen amateurs," most of its members being old University men. It promptly instituted a championship meeting; but in its subsequent rivalry with the L.A.C., the senior club proved the favourite, and apart from this annual championship meeting and the staging of the 'Varsity sports at its headquarters at Lillie Bridge (opened 1868), the A.A.C. did not feature very prominently in the sport after its early years of activity.

Indeed, so much did it decline, and so unpopular was the date of the championship meeting among the majority of athletes and particularly members of the L.A.C., that in 1879 the L.A.C. also promoted a championship meeting, but in the summer. The A.A.C. meeting was held in the spring on the Monday following the Inter-'Varsity sports, and obviously conferred advantages upon the University men; the summer meeting was of like benefit to other athletes whose training commenced later. The existence of two championship meetings, however, without any overriding authority, constituted an impasse; and in order to determine this difficulty, and if possible create a governing body which should control the sport throughout the country, a conference was held at Oxford on the 24th April 1880. At the instigation of several Oxford men, among whom were B. R. Wise, C. N. Jackson and M. Shearman (now Sir Montague Shearman), this meeting was convened by the Presidents of the O.U.A.C. and C.U.A.C. jointly, and representatives of the Northern A.A.A., the Midland A.A.A. and all the Southern clubs were invited to attend.

As a result of their deliberations, the Amateur Athletic Association was founded and given jurisdiction over all British athletic sports. The organisation of an annual

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championship meeting was confided to it, and it was decided that henceforth this meeting should be held in the summer, in the North, Midlands and South in rotation. Subsequently, the venue became fixed by custom in London, the other districts receiving financial compensation for their renunciation, every third year, of the right to hold the championships ; and the date was stabilised at the first Friday and Saturday in July. The championships were declared open to all who had never competed for money and who could subscribe to the definition of an amateur laid down by the newly incorporated Association.

The drafting of a constitution, the framing of laws and rules for competition, were among the first duties of the Association, which also formulated regulations to govern prize values, handicaps, records and club membership, most of which have, of course, been altered from time to time to accord with changed conditions. Very extensive powers were entrusted to the Association, which was definitely intended to occupy a predominant position ; and not only individuals, but also clubs, were made subject to its punitive as well as its protective measures. It was determined that all athletic meetings should be held under the laws of the Association, and so advertised ; and for the protection of the athlete it was decided that clubs ought to be affiliated to the Association, and that open meetings, if promoted by non-affiliated clubs, must be registered with the Association by payment of a fee. Athletes who competed at unregistered meetings were liable to suspension, and clubs guilty of malpractices were to be similarly penalised ; and drastic as these and other measures may appear to be, it must be remembered that the evil of veiled professionalism was very real in the early history of amateur athletics, and that even to-day, pettifogging though many of the regulations are, the dangers which they seek to avert are by no means eliminated.

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Another problem was shortly to confront adherents to the sport, and that was connected with the management of cycling events. Cycling was and is governed by the National Cyclists' Union; and in the days when its popularity was greater than at present it was customary to include cycle races in the programme of athletic sports meetings, when their management was handed over to the promoting club. Differences arose about the rules, and came to a head in 1885. Fortunately, a round-table conference secured their settlement; an alliance was formed between the two bodies, and it was decided that cycling races should be held under N.C.U. rules and running races under those of the A.A.A.

With the development of the athletic movement the burden of government became too heavy for one central body to bear, and decentralisation was effected. The governing body divided itself into three. The North and Midlands were formed into separate associations, controlling athletics in their districts; whilst athletics in the South were placed under the direction of the Southern Committee of the A.A.A. The management of the Association was vested in the General Committee, which is composed of representatives of these three bodies and meets at least twice a year to discuss general matters of policy affecting the whole country. In particular the General Committee, through its several sub-committees, controls finance, hears appeals, suspends clubs or individuals, makes and interprets laws, passes records, controls the championships and international matches, and selects national teams. The three branches sitting separately legislate and administer for their respective districts.

The process of decentralisation has been carried a step further since the Great War in the organisation and growth of the county movement. The work of the District Associations, especially in the South, had become so vast that they were becoming moribund under the strain. In order to relieve the central bodies

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of choking matters of detail and leave them free to elaborate a wide and constructive policy the creation of County A.A. Associations was obviously necessary.

These Associations were intended to promote their own county championships ; if possible to hold inter-county contests ; to encourage local athletics ; and to administrate generally within their boundaries. Unfortunately, up to the present the scheme has appealed only to the South and Midlands, where it has worked with much success ; and those districts only have supported the Inter-County Relay and Team Championships, held annually in London since 1925. On account of the somewhat unwieldy programme, the predominance of some three or four county teams, and the problem of finance, this meeting cannot at present be considered entirely satisfactory. In all probability it will soon give place either to inter-county championships on a league principle or to championships within the three districts.

This, however, is to advance too rapidly, and it is necessary to revert to the nineteenth century in order properly to trace the general progress of athletics in England. A great number of clubs sprang up during the latter half of the century, among which the most prominent were the L.A.C., whose meetings were perhaps the most important outside the championships ; the Polytechnic Harriers, who have done so much for Marathon running in England ; and the Birchfield Harriers, whose great work in the Midlands has just been crowned by the opening of their new cinder track in Birmingham. It was in 1876 that the L.A.C. first used the Stamford Bridge ground, which in those days possessed a 250 yards straight, but was, as now, a quarter-mile in circumference, in contradistinction to the A.A.C. ground at Lillie Bridge, which was a third of a mile long. The old Queen's Club and the two 'Varsity tracks were also of this length. The Polytechnic Harriers, besides holding a Marathon annually

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since 1909, have staged the principal inter-club match of the year, the Kinnaird Trophy Competition, for which some ten or twelve Metropolitan clubs enter ; and this club plays a considerable rôle in cross-country matches. Three other clubs of long standing which are perhaps better known in that sphere than on the track are the Thames Hare and Hounds, a pioneer in paper-chasing, the Blackheath Harriers, and the South London Harriers ; and there are hundreds of other clubs of varying renown which cannot be mentioned through lack of space.

It is proper to indicate, however, the work of the L.A.C. in another branch of athletics, namely among schoolboys. The L.A.C. for long encouraged the sport among boys, particularly from the public schools, and even during the years of the Great War this club nobly continued to hold its annual Public Schools Sports Meeting. The meeting was inaugurated in 1890 with a 440 yards race ; in 1897 it was properly established with a programme of eight events—100, 440, 880, mile, high and long jumps, 120 yards hurdles, three-quarter mile steeplechase, to which were added later a mile walk and a pole jump, and two junior events.

This good work has since been supplemented by the Achilles Club, founded in 1920 and composed entirely of past and present Oxford and Cambridge athletes. This club, to which relay racing ever had a great appeal, and which may be regarded as the pioneer of that form of athletics on a large scale in England, introduced public school relay races between mixed teams of past and present public school boys. It also began a system of demonstration matches, usually on the handicap relay principle, at the schools themselves, a policy now followed by the L.A.C. There can be little doubt that such methods of instruction, inculcating both the team spirit and good style, will ultimately prove beneficial to British athletics ; and they are symptomatic of the educative work that is now being almost universally attempted.

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America was for long in the van with its inter-scholastic meetings, to which further reference will be made in another chapter ; France established a post-War Ministry of Sport ; and in England in 1925 a Schools Athletic Association was formed and held Inter-County Schoolboy Championships in London, in which over twenty counties competed. Moreover, the counties themselves, and great bodies like the Middlesex Schools Association, arrange matches and competitions for boys outside the great public schools, which, of course, have their own annual sports and in many cases an inter-school match as well ; and provided overstrain and publicity are avoided these movements deserve high praise. The spread of physical culture and teaching of athletic sports among children has become well-nigh universal, and the large number of *Gymnasia für Leibesübung* in Germany, the Sokols in Czecho-Slovakia, the Swedish Schoolboys Athletic week, and, among University students, the International Students Games, held in conjunction with the C.I.E. Congress, testify to the vigour of the movement.

Leaving discussion of the modern Olympic Games to another chapter, merely noting their revival in 1896 and indicating that they have exercised a most profound influence upon the universal development of athletics, particularly since the vintage year, 1908, attention may be drawn to the further progress of athletics in England in spheres other than educational. For many years the A.A.A. had preserved a rather narrow championship programme, and it was partly through the pressure of the English Field Events Association (founded 1910) that the governing body was ultimately persuaded in 1914 to include the javelin, discus, hop, step and jump, and the 440 yards hurdles. This delay in encouraging these particular field events, together with the fact that none of them, nor the hammer since 1921, is practised at the Universities, may be borne in mind when contrasting British standards with those of the Americans and

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other Europeans ; but it does not afford a conclusive explanation of British inferiority, which is equally evident in the pole and long jumps and in the weight, all held since 1866.

During this period was introduced the system of international matches with which Europe is now almost overrun. Not only did Norway, Sweden and Denmark commence a Landskamp, held annually since 1917 at Oslo, Stockholm and Copenhagen in rotation, but France engaged in matches with Belgium and Sweden, and in Great Britain a Triangular International was begun between England, Scotland and Ireland in 1914, and continued annually after the War, England proving successful on the majority of occasions.

Except in the Services, athletics were in abeyance in Europe during the period 1914-19, but in America it was found possible to continue the Amateur Championships without intermission, although the Inter-collegiate Championships were abandoned in 1917.

In post-War England, where athletics were recommenced in the summer of 1919, one of the most significant movements came from the Universities. The foundation of the Achilles Club marked the re-entry of Oxford and Cambridge athletes in large numbers in open competition, both at home and abroad, and at the two Universities many innovations occurred. The inter-college system of sports meetings, run on the league basis at Cambridge and on a combination of league and knock-out bases at Oxford, was revitalised, and inter-college relays were developed. The Oxford-Cambridge relay races were founded and the Inter-'Varsity programme revised. The ten events which had stood since 1903, namely 100, 440, 880, mile, 3 miles, high hurdles, high and long jumps, weight and hammer, were changed, the hammer going out and the pole jump and 220 yards low hurdles coming in. And, perhaps as a sequel to the transference of Anglo-American matches from Queen's Club to Stamford Bridge, the

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'Varsity Sports also moved there in 1929, the Queen's track, which had been used since 1888, being converted into tennis courts.

The other Universities were not far behind. In 1919 the Inter-'Varsity Athletic Board was constituted with the object of advancing all games among its members, and comprised all the English and Welsh Universities except Oxford and Cambridge. Annual track and field championships were inaugurated. Meetings are now held with other bodies, and at least one University—Leeds—has laid out a superb ground. In 1925 the Scottish Universities followed the lead, and the Atalanta Club was established on lines similar to the Achilles.

The second important movement—for the experiment of holding English Championships in 1922 and its abandonment after three years' trial can be passed over—was among the counties; but as the origin and growth of this movement has already been described, one can pass rapidly on to the third feature of recent athletic development, which is the increased interest in relay and inter-club competition.

Relay racing was introduced to this country from America; but although a one mile medley was included in the A.A.A. Championships from 1911 onwards, it was only after the Great War that relays attained a popularity in England commensurate with that enjoyed in the United States. In 1920, immediately after the Olympic Games at Antwerp, those two great Oxford and Cambridge athletes, Bevil Rudd and Professor Philip Baker, inaugurated the Achilles Club by staging at Queen's Club, London, the greatest international relay match ever seen—between the United States Olympic Team and the combined teams of the British Empire. At that first meeting the field events were individual; subsequently they were conducted on the team principle as well, by taking the aggregate performance of the several men in each team. Before

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an overflowing crowd, which has never since lost its love for good relay racing, a thrilling encounter resulted in a tie. So popular was the venture, and so important and significant, that in 1924 it was adopted by the A.A.A. and held at Stamford Bridge. On that occasion the Americans obtained an overwhelming success by 11 events to 3; on the third occasion (1928), before 41,000 people, they won a very great match by 8 points to 6.

With such a brilliant commencement and continuance, interest in relay racing has heightened ever since the War, and no athletic meeting is complete without one or two relay events. In 1920 were inaugurated the Oxford-Cambridge relay races, held every December at each University in turn; in 1925 the Inter-County Relay Meeting was begun; in 1927 the A.A.A. sensibly converted their Relay Championship into one consisting of four quarter-miles, and added a sprint relay, 4 by 110 yards; and many clubs, particularly the Achilles, conduct their matches largely on the relay system. The efforts of the L.A.C., Polytechnic Harriers and Achilles Club—to mention perhaps the three chief innovators—to encourage and develop inter-club matches, whether on Saturdays or on mid-week evenings, have been attended with marked success, especially in the South of England; and provided individual athletes are not surfeited, nothing but good ought to accrue to the game through this wave of team competition.

One result of the cult of inter-club matches has been the payment of more attention to the needs of the less prominent performer. More and more is the value of the scratch race being appreciated; and the open handicap, with its large entry and rather sordid commercialism, is gradually being condemned. The introduction of "Graded Races," in which athletes are divided into classes according to ability, all those belonging to one class competing against each other in level events, has

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proved successful and attractive in this country ; and whilst one realises the utility of the short limit handicap, one is convinced that in the extension of the graded race will be found the real road towards creating a higher standard of general athletics among the rank and file. The evidence from Continental countries, where big handicap races are almost unknown, substantiates this opinion.

Yet another feature of post-War athletics has been the closer relationship with foreign athletes. They have attended the A.A.A. Championships in greater numbers and with even more signal success, conspicuous among them being the German contingents since 1926 ; whilst English teams and individuals have competed with much pleasure and gained some victories throughout Europe. These contests are evidence of the great advance upon the Continent in the practice of athletics. Fuller consideration of this subject is, however, reserved for another chapter.

In conclusion, something should be said about women's athletics. The attitude of the Greeks has been indicated, and the general disapproval of feminine participation in athletic contests endured until women's emancipation in the twentieth century. Before the War women's colleges in America permitted and encouraged track and field athletics, but it was only during the War that European women began to take up athletics seriously.

Since 1919 the movement has progressed with startling rapidity, and has achieved vogue and popularity. In England, particularly in and around London, women's clubs have been founded and flourish. The records made by English girls were soon assailed by Czech, Swedish, French, Belgian and now German women ; and even Japan has added to the number who compete in international games. Championships and Internationals take place annually ; in 1925 a triangular match was held in London between teams representing

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Canada, Czecho-Slovakia and Great Britain ; and towards the end of the same year the Second Women's Olympiad was held at Stockholm, the first having been at Monte Carlo in 1922. In 1928, to the regret of many shrewd judges and lovers of athletics, the women's events, reduced in number, were included in the programme of the Olympic Games at Amsterdam, Great Britain abstaining ; and despite much opposition, their inclusion, subject to alteration in the events to be contested, is confirmed for the games of 1932.

CHAPTER II

THE OLYMPIC GAMES

Section 1.—Ancient

THE contemplation of the manners and customs of ancient and mediæval peoples is among the most fascinating as well as the most useful of occupations. The historian is able to trace the evolution of man's life from the nomadic tribe to the highly organised twentieth-century state, and to show that the primitive existence was the germ, in thought and action, of the modern complex nation. Any great movement, whether in thought, art, politics or religion, can be traced back to a similar but usually less highly developed system in a previous age ; and it is, therefore, not surprising to discover that games, which occupy so prominent—almost too prominent—a position in modern life, held a similar place in the existence of ancient communities.

Games, indeed, as has been suggested in the first chapter, date from the remotest antiquity ; and it is almost indubitable that the Greeks, from whom so much of modern culture springs, adopted their athletic exercises from the more ancient civilisations of Asia. That they subsequently advanced these games to a high pitch of efficiency and excellence was only to be expected from a people whose genius in so many spheres has excited the admiration and emulation of all those who have succeeded them ; and it is with the Olympic Games of Greece that this practice of physical culture culminated. The modern cult of athletics possesses marked resemblance to the enthusiastic practice of the

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Greeks, and the modern Olympic Games, which form the pinnacle of athletics, have been deliberately modelled upon the ancient. It is therefore both fitting and interesting to inquire into the origin and development of the ancient games before turning to consideration of the modern.

From early times it had been customary among the Greeks to hold meetings for purposes of festivity and social amusement, and some trial of bodily strength, such as a wrestling match or a foot-race, formed originally the principal entertainment. Military exercises, to which the perpetual internecine feuds of the Greek states gave particular value, were of ordinary occurrence in these games; and it was possibly their military associations which occasioned their introduction at funerals, a custom which was quite ancient even in the time of Homer.

Homer shows in the *Odyssey* that games, which included not only athletic exercises but music and dancing as well—demonstration of the imaginative cultural faculty of the Greeks—were the ordinary amusement of princes; and the description of the games at the Court of Alcinous indicates their practice a thousand years before the Christian era. They were even then conducted in a systematic manner, and the office of public judge of the games was coveted as conveying the degree and honour of a magistrate. Moreover, at that time, and indeed for long afterwards, only men of rank participated in the games, although they were attended by multitudes of spectators; and in this respect they resembled nothing so much as the mediæval jousts of the age of chivalry.

The most solemn and brilliant meetings were, however, at the funerals of distinguished men. The funeral of Patroclus, described in the *Iliad* (Book xxiii.), may be regarded as a perfect example of the magnificence with which such rites were celebrated. These games must have been held about the year 1100 B.C., and, as

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usual at that period, only men of the highest rank competed. In the foot-race, for example, the contestants were Ajax, Ulysses, and Antilochus, the son of Nestor ; in the wrestling match, Ajax and Ulysses.

The foot-race, which appears to have been about half a mile, was obviously won by a most experienced athlete, Ulysses, who carefully allowed Ajax to set the pace until 200 yards from the tape. At this stage, unfortunately, a suspicion rests upon the conduct of Pallas Athene, who apparently lent her aid to Ulysses by causing the weary Ajax to stumble. At all events, Ajax lodged a protest with the judges, swearing that he had been defeated by a goddess, not Ulysses ; but the judges overruled the objection, and the discomfited Ajax, derided by the crowd, who perhaps thought his protest unsporting, had to be content with second prize—a well-fed bull. Ulysses was awarded a huge silver urn, whilst the luckless Antilochus received a talent of pure gold. Even such prizes were simple in comparison with those awarded in the chariot-race, where the victor received a large vase and a beautiful bride endowed with all the domestic virtues, whilst the fifth received a double bowl !

The games included also boxing with the *cæstus*, wrestling, throwing the quoit (*i.e.* discus) and the javelin, archery, and fencing with the spear, and these details are of interest as showing at how early a date the events in the games were standardised.

There are also traditions of games celebrated at Elis in very early times ; and Hesiod, who was contemporary with Homer, refers to games at Chalcis, wherein he gained a prize for song ; but it does not appear from either of these poets that in their time any periodic festival was established like that which subsequently became so famous under the title of the Olympic Games. Not only are these early festivals restricted to solemn and usually religious occasions, being held at funerals, or in celebration of some victory, or at a solemn thanks-

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giving to the gods, and always in the vicinity of some temple or sacred spot, but the rewards of the victors—examples of which have been cited—indicate a marked distinction from the Olympian contests, in which the public award of a crown of wild olive, possessing no intrinsic value, was the sole tribute to the victor.

After Homer's age the memory of the games was almost lost through the disputes which continually troubled the Grecian peoples ; and it was not until the year 884 B.C. that their re-institution occurred. At this period Iphitus ascended to the throne of Elis and sought a remedy for the distress pervading his country. His messenger to the Delphic oracle returned with the command, possibly suggested by his own fertile mind, "that the Olympic festival should be restored ; for its neglect had brought upon the Greeks the wrath of Jupiter, to whom it had been dedicated, and of Hercules, by whom it had been instituted ; and that a cessation of arms must therefore be proclaimed for all cities desirous of partaking in it." It may be pointed out that legend ascribes the origin of the games to Jupiter, in celebration of his victory over the Titans, but the general opinion is that they were first instituted by Hercules, as the oracle said, after a victory over King Augias, 1222 B.C. Be that as it may, Iphitus obeyed the god's command, caused the armistice to be proclaimed, and, receiving general support, modelled the institution, possibly in collaboration with the Spartan lawgiver Lycurgus.

It was ordained that a festival should be held at the temple of Jupiter at Olympia, near the town of Pisa, in Elis, open to the whole Hellenic race ; and that it should be renewed at the end of every fourth year. The festival was to consist in sacrifices to Jupiter and to Hercules, and in games in their honour ; and as wars might prevent not only individuals but whole States from enjoying the benefits the gods would bestow upon the participants, it was further ordained that an armistice

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should be proclaimed throughout Greece for some time before the commencement of the festival, and continue for some time after its conclusion. The significance of this ordinance in modern times may be even better appreciated if it be remembered that the boon of peace which it secured was one of the ideals underlying the foundation of the modern Olympic Games.

The Eleians themselves obtained great privileges, arising out of their appointment as guardians and supervisors of the games. They were permitted to enjoy their possessions without molestation, as the games were celebrated within their territories ; and the Spartans themselves concurred in this situation. So evident were the advantages that in the sixth century B.C. games were also instituted at Delphi, Nemea and Corinth ; but as their conduct was similar to that of the Olympic Games, further reference here is omitted, and the reader is referred to the first chapter for an account of their history and importance.

At the Olympic festival established by Iphitus, the foot-race seems to have been the only game exhibited ; but subsequently the contests were multiplied. They appear to have been conducted somewhat irregularly until 776 B.C., when the Eleians engraved the name of their countryman Corœbus as winner of the foot-race ; and thenceforward there is an almost unbroken list of the winners in each succeeding Olympiad for a period of 1000 years. From that date also it was the custom to name each Olympiad after the victor in the foot-race ; and the period of time between celebrations of the games, namely four years, became a famous era among the Greeks, who computed their time by it. The games were exhibited at the time of the full moon next after the summer solstice, and until the 77th Festival (August, 472 B.C.) all the events were concluded in one day ; but afterwards the ceremony was extended to five, the first being the day of the sacrifice, the third the full moon, and the fifth the feast.

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In the course of time the original pageantry of the religious processions and celebrations yielded in magnificence to the display provided by the gathering of huge concourses to the games. A mart or fair was the natural consequence of a periodical assembly of pleasure-seekers and religious devotees ; and the congregation of representatives of all the scattered Greek communities rendered the occasion suitable for political negotiation, the proclamation of treaties, and the arbitrament of disputes. Indeed, the primitive village feast developed into a common capital for all the branches of the Hellenic race, and grew with time to be the Mecca to which every Greek foregathered, from the remotest colonies as from the neighbouring towns. The bond of union became, in fact, so strong that it survived the extinction of Greek independence, and the games were only abolished in A.D. 394 by decree of the Emperor Theodosius.

This communion of all the Greek people contributed in no small degree to the advancement of the arts, particularly, as will be later seen, sculpture, literature and music, of manners and of thought ; and so valuable were these advantages, and so united the appreciation of that value, that the truce of Iphitus became established as a Divine ordinance, so that wars in progress were even suspended in order that people from all parts of Greece might attend the festival in safety. And it is proper to observe that although a few monarchs deemed it expedient, for military and political reasons, to disregard this law, yet it was honoured on all save the rarest of occasions. So jealously was the truce upheld that the Spartans risked the liberties of Greece when the Persians were at the gates of Pylæ, rather than march upon the holy days ; and on another occasion, when their scruples flew less high, the same nation was condemned in a heavy fine, and on refusal to pay, excluded by decree from the games.

In Ebers' *Eine Egyptische Königstochter* will be found

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an excellent description of the games in their palmy days. After portraying the numerous races of Greek origin which were represented, the market beyond the river Alphæus where one could find merchants from all parts of the world, the crowds, the ambassadors, the distinguished visitors, the valuable chariots and horses, the excitement of the games and the solemn presentation of the olive wreath to the winners, the author gives an exhilarating account of the wrestling match between the champion Milo and the youthful Spartan Lysander, who after two hours of matchless struggle sank lifeless to the ground. The honour accorded to a great athlete, even when vanquished, is well instanced by the following paragraph, the utterance being by a spectator :—

“ Milo was obliged to resign the wreath, and the fame of the youth will resound through all Greece. Truly I would rather be dead like Lysander than live like Callias, to know an inactive old age. All Greece, represented by its best men, accompanied the body of the beautiful youth to the funeral pyre, and his statue is to be placed in the Altis.

“ Finally, the heralds proclaimed the award of the judges. ‘ Sparta shall receive a victor’s wreath for the dead man, for it was not Milo but death who conquered noble Lysander, and he who goes forth unconquered after a two hours’ struggle with the strongest of the Greeks is well deserving of the olive branch ! ’ ”

The games were presided over by ten judges—the Hellanodicæ—chosen one for each tribe of the Eleians. They were obliged solemnly to swear that they would act impartially and not take any bribes ; and they had to attend the gymnasia beforehand to receive instruction in their duties. There were also certain officers to keep order, called *alutai*, similar to the Roman lictors.

One feature of the games which has undergone a complete transformation in modern times is the position of women. In Hellas they might own chariot-teams and

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win prizes, but all except the priestesses of Demeter were forbidden to attend the celebration. Those who dared to infringe this law were immediately thrown down from a rock. This, however, was sometimes neglected, for in later years women certainly did attend the games, and at Elis were instituted special games in honour of Hera, which were confined to Eleian virgins and presided over by a board of matrons. The Spartans, too, under the inspiration of Lycurgus, encouraged athletic contests for maidens. In his educational system the great lawgiver ordered the young girls to exercise themselves in running, wrestling, and throwing the discus and javelin, that their bodies being strong and vigorous their children might be the same. But the result, if Aristotle's scathing stricture is reliable, was disastrous to their morals.

It may be generally stated, therefore, that competition in the Olympic Games was restricted to men and boys. An athlete could commence his career as a boy in the contests reserved for boys, which followed closely those of the men; and he could go on competing until the age of thirty-five, when he was debarred, it being assumed that he could no longer improve.

The training for the contests was very rigorous, and took place in the gymnasia, which were special buildings provided by the State and managed by public officials. The regulation of the gymnasia at Athens is ascribed by Pausanias (i. 39, 3) to Theseus. Solon made laws on the subject; but according to Galen it was subsequently reduced to a system. Every athlete in the Olympic Games had to undergo ten months' training in the gymnasium, and it is worth mentioning in passing that these institutions ultimately extended their scope as the Greeks realised the importance in education of physical culture. The gymnasia became connected with both medicine and education, and provision was made for the moral training of the athlete and his instruction in letters and music. Philosophers frequented the

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porticoes, and Plato has immortalised the Academy of Athens, which was the resort not merely of the athlete, but also of students of philosophy and of science.

Before the games opened, the athletes presented themselves to the judges and proved that they were of Hellenic descent—an indispensable condition of admission—and of blameless life. They swore that they had trained properly and that they would “play the game”; and it may be noted that the latter oath is taken by every athlete in the modern games.

Until the Fourteenth Olympiad the only race was the *dromos*, which was 192 yards, or one length of the stadium. There was then added the *diaulos*, or two-lap race; and in the next (Fifteenth) Olympiad the *dolichos*, or long-distance race, probably about $2\frac{2}{3}$ miles in length. And there was also, for a time, a race in heavy armour, indicative of the early idea of games being a hand-maiden to military service (cf. Plato's *Republic*, Book iii.).

There was no Marathon, that being a single run accomplished by the most famous of Greek runners, Phidippides, to bear the news of Athens' victory in 490 B.C.

Wrestling, one of the Homeric games, was introduced in the Eighteenth Olympiad, the most famous exponent being Milo of Crotona, who after seven victories met with no opponent, and who is said to have supported the falling roof over the school of Pythagoras; and in the same year the *pentathlon* was added. This was a combination of the five events praised in Simonides' well-known pentameter:—

ἄλμα; ποδωκείην; δίσκον; ἄκοντα; πάλην,
or leaping, wrestling, discus, javelin and running.

In boxing, the use of the *cæstus*, or leather thongs bound round the fist, marked the chief difference from modern practice, and the weighting of the glove with lead was a later and Roman development. The references in contemporary literature to broken ears rather than broken noses suggests a windmill style; even the use

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of the *cæstus* was prohibited in the chief event of all, the *pankration*, or combination of boxing and wrestling.

Chariot-races, which may be regarded as the fore-runners of those so popular among the Romans, were held in the Hippodrome, and were described by Pausanias and also by Pindar in many of his celebrated odes; and there were also contests in poetry, eloquence and the fine arts.

The prizes originally possessed some intrinsic value, and tripods were a common variety; but after the Sixth Olympiad, upon the advice of the Delphic oracle, the crown of wild olive was substituted and became the sole reward of the victor. These olive wreaths were cut from the *kallistephanos*, or sacred tree of Hercules, which, according to legend and Pindar, had been brought by him from Ister and planted in the sacred grove at Altis. So small and trifling an award was supposed to stimulate courage and virtue, and its reception was regarded as the highest honour which could befall a man or his city. It may not be without interest to relate that when the Achilles Club competed in Athens in 1927 the winners were presented with wreaths culled from this same grove, a courtesy and a significant gesture which did not pass unappreciated.

It would be erroneous, however, to conclude that the conquering athlete received no further honour and acclaim. His name, parentage and country were proclaimed by the heralds; the judges placed the wreath upon his brow; his statue was carved by the most famous sculptors and set up among the *Olympionicæ* (statues of the victors) at Olympia in the sacred grove of Jupiter, where the fragments may be seen to-day. His return home was that of a successful warrior, a comparison which Thucydides employs with delightful irony in describing a reception of the famous Lacedæmonian general Brasidas. An Athenian victor was rewarded, in accordance with the law of Solon, with 500 drachmæ and free rations for life in the Prytaneum—

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modern notions of amateurism differ somewhat from the Greek!—whilst a Spartan obtained, not inappropriately perhaps, the post of honour in battle, a reward not calculated to enable him to boast for long of his triumphs. The hero's entry into his native city was not through the gates, but, to make it more grand and solemn, through a breach made in the walls. Painters, sculptors and poets were employed to celebrate his name; and ridiculous exaggeration of values though this was, one cannot refrain from thankfulness for the works of art which were thus created.

It may not be altogether out of place to refer more particularly to this aspect of the ancient games. Simonides, whose well-known pentameter has already been cited; Euripides, who was obliged to disguise his feelings and compose pæans of praise about the victories of Alcibiades in the chariot-race; and the lyrist Pindar—to mention only three great poets—were frequently employed to laud the heroes of the games. These contests provided the theme for some of the finest odes of Pindar, the *Epinicia* or Odes of Victory, a collection of forty-four odes, traditionally divided into four books, answering to the four great festivals at Olympia, Delphi, Nemea and Corinth. The actual victory which occasioned the ode is seldom treated at length or in detail; Pindar's method was to choose and dilate upon some heroic myth connected with the victor's city or family, and to return at the close to the subject of his merit or good fortune. There is a strongly marked religious feeling in Pindar's poems, and he has been described, not without good reason, as the prophet of generous emulation and reverent self-control—two ideals which the modern Olympians have ever had set before them; whilst in political thought he expressed another modern ideal, that the rivalries of peace are worthier than the triumphs of war.

The period to which most of Pindar's odes belong, namely 500–460 B.C., also marked a stage in the

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development of Greek plastic art, and it may be said that Olympia forms the link between Pindar's poetry and Greek sculpture. From about 560 B.C. sculpture had been employed to commemorate athletes, chiefly at Olympia; and in a striking passage (*Nem.* v.) Pindar recognises sculpture and poetry as kindred arts for this purpose.

It is certainly right to attribute much of the excellence of Greek sculpture to athletics. As Mr. Percy Gardner points out in his profound and fascinating chapter in *The Legacy of Greece*, naturalism, one of the chief qualities of Greek art, found full scope in the opportunities afforded to the sculptor to observe the naked human body in the gymnasia, where the finest of the young athletes could be studied and copied in every variety of pose and action. And employing his inherent sense of beauty to preserve the beautiful and reject the ugly, the sculptor would create his gods after the type of idealised man, giving to Heracles the form of the wrestler, to Hermes that of the ideal runner, and to Apollo, not the muscles of the trained athlete, but the serenity and symmetry of a man perfected by self-reverence and self-control.

Even in their work which represented human types, the Greek sculptors' love of harmony was evidenced. To cite only a few examples, the work of Myron, famous for his *Discobolus*, of which copies anatomically inaccurate are to be found in the Vatican and the British Museum, was celebrated for rhythm in motion, and that of Polyclitus for careful balance and a sense of anatomical proportion. His greatest works, the *Doryphorus*, or spear-bearer, and the *Diadumenus*, or victor binding a wreath round his brow, are the most beautiful fruit of a life-study in the gymnasia; and there can be no question that for the work of Pheidias on the Olympian temple of Zeus and of Praxiteles, with, for example, his superb *Hermes*, posterity is indebted to the cult of athletics.

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The learned author draws attention to another feature of the art of the Greeks which also found expression in their attitude towards athletics, namely idealism. He says, in words which the modern seekers after records might ponder: "In their practice of athletics the Greeks did not, like the moderns, think only of the number of feet an athlete could leap, or the space of time he would take to run a distance. They thought also of his form, of the rhythmic and harmonious character of his action. If an athlete showed ugly form, they would hiss him, as they would an incompetent actor. In all the statues of athletes which have come down to us, not one shows an inharmonious development." He goes on to contrast the Greek types with the forms of modern athletes, pointing out that northern youth is less harmoniously built, more sinewy, harsh and wiry in type than the rather fleshy Greek. He instances the splendid work, exhibited at Paris and Amsterdam, of Dr. Tait McKenzie, the Director of Physical Education at the University of Pennsylvania, who has created his beautiful figures from careful study of the forms and measurements of hundreds of athletes in Philadelphia, so that they are worthy to rank beside such masterpieces of athletic idealism as the famous *Apoxyomenos*, or athlete scraping sand and oil from his body with a strigil.

Finally, Mr. Gardner, in sympathy with the probably prejudiced views of the writers of this book, deplors the influence upon women of the excessive cult of athletics. After suggesting that the practice of athletic games by women tends to make them depart from the essentially feminine, he expresses a desire to see the physical ideal of efficient womanhood properly presented in modern art, as a being who moderately pursues physical culture as an aid to health and yet preserves her femininity in grace of body and of mind.

This rather lengthy digression may serve to illustrate the idealism with which the Greeks endowed the games.

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In yet another aspect of this spirit the games are worthy of consideration ; they evoked in Greece the dawn of public spirit. As a famous historian has pointed out, the judges first applied the name of Hellenes to the class. For although politically divided into provinces, involved in feuds and local animosities, the members of this class recognise one another, call a truce for the festival, and find a common interest in preserving their class supremacy. Gymnastics require self-control and training ; military service requires obedience ; class supremacy is unfavourable to the pre-dominance of the individual man. Thus men trained themselves strictly and austere, and gained control over themselves, body and soul. They set up an ideal of the perfect man, who by training and obedience earns the right to be free and to rule. And they held out to him the prospect of becoming equal with the gods ; but on earth they kept him within bounds by raising above him the other Greek ideal, that of the free self-governing community, the aggregate of equally worthy and therefore equally privileged free men. It was this idealism in the Greek love of athletics, not the exaggerated hero-worship which Euripides so properly condemned in the *Auto-lycus*, which was so admirable ; and it may be said that the same spirit of idealism animated the founders of the modern Olympic Games, which in their fellowship and in their pacific aims bear so marked a resemblance to the games of ancient Greece.

Section 2.—Modern

It was in 1894 that a great Frenchman, the Baron Pierre de Coubertin, initiated the most important athletic movement of modern times by gathering around him in congress in Paris representatives of most of the principal sporting bodies in Europe and America. His organising genius, his noble idealism and his power of

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inspiration enabled that congress, which constituted itself the International Olympic Games Committee and elected the Baron as its first president, to prepare the way for a revival in 1896 of the ancient Olympic Games. The Baron was inspired by the racial union which, as has already been described, in part resulted in ancient Greece from the cult of athletics, and among his objects were the internationalisation of sport and the prevention of war.

That the former object has been in considerable measure achieved is evidenced by the facts cited in Chapter III; it may be urged that so far the latter has scarcely been fulfilled. It is to be borne in mind, however, that games at the best can only be a contributory factor to the cause of peace and international harmony. The aspiration is that the influence which they wield may be so pervasive as to engender a universal spirit of sportsmanship and fair play.

Appropriately enough, the first modern Olympiad was held in Athens in 1896. Through the munificence of a Greek merchant, M. Averoff, a superb new building was erected on the site of the ancient stadium of Lycurgus, which had only recently been excavated. Unfortunately the great beauty of the building, whose pure white marble terraces glisten in the sunshine as if in emulation of the ancient temples of the city, was not matched by its utility. With a seating capacity of 45,000, and a length of 200 yards, it promised well; but in breadth, unhappily, it boasted only 30 yards. The difficulty of negotiating the consequent sharp corners accounts for the poverty of the records of that first meeting, and in part occasioned the transference of the second festival to Paris in 1900.

Since then the venue of the games has altered every fourth year, typifying perhaps their international character; and the Third Olympiad was held at St. Louis, the Fourth at London, the Fifth at Stockholm, and the Sixth should have been held at Berlin in 1916. But for

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an obvious and terrible reason that Olympiad was never held ; and when the games were resumed after the Great War, Belgium was the host at Antwerp, and the German people were excluded. The Eighth Olympiad was in Paris in 1924 ; the Ninth in 1928 was held in Amsterdam, and in part made memorable by the re-inclusion of Germany among the nations taking part. Los Angeles has been selected for the Tenth Olympiad ; and various cities have been proposed for the celebration of the games of 1936, among them Berlin and Madrid. On one occasion the regular quadrennial sequence has been broken, in 1906, when the Greeks organised a large and successful Panhellenic meeting in Athens, a meeting which does not, however, rank as one of the Olympiads proper.

Before relating some of the outstanding occurrences at the several games, it is proper to consider their organisation. The games are controlled by an International Olympic Committee, presided over by Count Baillet-Latour, and consisting of three or less representatives of every country which chooses to compete : by 1928 there were some forty-eight nations represented. These representatives are elected by the Committee when vacancies occur, and they are men of such standing in their respective countries that they are able to preach and practise with effect the gospel of the Olympic movement.

This Committee holds a plenary session or congress every fourth year, usually the year subsequent to the games, and an annual meeting, lasting about a week ; and questions demanding rapid decision during the interim are determined by the Executive Committee of seven, about whose powers at the moment there is, unhappily, some doubt.

Among the functions of the I.O.C., or its so-called Executive Committee, are the determination of the dates of the games ; their allocation to the country which is considered to have the prior claim to the

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honour of acting as host ; the inclusion or rejection of particular sports ; the assurance of the good and sportsman-like conduct of the games ; the establishment of general principles of amateurism ; and the spread of the Olympic movement throughout the world.

The responsibility for special organisation, such as the duty of providing stadia and of assisting in the provision of accommodation, falls upon the National Olympic Council of the organising country. As compensation for the very heavy financial outlay which the organising country is called upon to face, it is permitted to take over all the gate receipts ; consequently all the visiting nations are confronted with the serious problem of meeting the expenses of transporting, housing and feeding their teams.

Since 1920 the conduct of the various sports contested—which these shall be is determined by the I.O.C.—has been left entirely in the hands of the International Federations which govern each particular sport. Thus, for example, the control of track and field athletics is entrusted to the International Amateur Athletic Federation, whose codes of rules and amateur definitions apply, who nominate their own officials, determine the programme of events, control the entries, decide questions of status, hear appeals, and who, working in concert with the committee of the organising country, prepare for and conduct their own programme.

These International Federations are composed of delegates from the governing bodies of the particular sport in every country where it is practised—the A.A.A., A.A.U., F.F.A., D.S.L.,* etc., being represented on the I.A.A.F. ; and they may be said to be independent of one another and of the I.O.C. except and in so far as the I.O.C. lays down any regulations for general

*A.A.A. : Amateur Athletic Association (Great Britain).

A.A.U. : Amateur Athletic Union (U.S.A.).

F.F.A. : Fédération Française d'Athlétisme (France).

D.S.L. : Deutsche Sportbehörde für Leichtathletik (Germany).

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observance at the games. Thus, for example, the I.O.C. has laid down a general definition of amateurism, within which all competitors must declare themselves to be, and which in some cases goes further than the International Federations' definition governing competition in particular sports. One instance of this is, of course, Association football. The Olympic definition of an amateur excludes anyone who receives payment for broken time; the F.I.F.A.† definition permits such payment; and a vexed discussion arose in 1927 over this divergence of view which still remains to be settled.

Each nation, moreover, has its own Olympic Association or Committee, *e.g.* in Great Britain the B.O.A. (British Olympic Association). The principal function of these Associations, which are composed of influential men acting in co-operation with representatives of all the governing bodies of sport interested in the games, together with a few co-opted experts, is to provide for the proper and worthy representation of their country at the games. The duty of selecting the competitors and of nominating the officials in each sport is left in the hands of the governing body of that sport; but the Olympic Association charges itself with all the arrangements for transport, housing, food and equipment.

The primary task of the National Olympic Associations is, therefore, to raise funds. In some countries, particularly on the Continent, where sport has an unfortunate and one trusts not permanent tendency to be regarded as a matter of political importance, Government grants have been sought and obtained. This system, one is happy to say, does not obtain in Great Britain, her Dominions, or the United States, in all of which the Olympic Association is entirely dependent upon voluntary contributions for the furtherance of its work. When this fact is borne in mind and it is realised that in some countries, especially perhaps Great Britain, there still exists a strong prejudice among many sports-

† F.I.F.A. : International Football Federation.

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men against the games, one is better able to appreciate the magnificent work of the various National Associations in raising, through their Appeals Committees and with the active support of the Press, the large sums (some £25,000 in Great Britain) necessary to ensure the proper representation of their countries.

Not only are the National Associations responsible for the financial burden of participation in the games; they have also the duty of fostering public opinion in support of the movement. That this is no light matter has been hinted at already; that it has been in considerable measure fulfilled is evidenced by the interest now taken by the Press throughout the world.

Further, in the case of the B.O.A., which may probably be regarded as typical of all associations, sub-committees have charge of the housing and entertainments arrangements, the latter being a sphere of activity in which, at Antwerp, Paris and Amsterdam, Great Britain has been particularly prominent. Hospitality was extended to the Dominion teams and to the representatives of other countries, and was reciprocated.

The programme of the games has undergone many changes since their inception, and in a volume on Athletics it is scarcely necessary to enlarge upon the other sports, few of which have been practised on every occasion. There can be no doubt that in the opinion of the general public track and field athletics are regarded as the principal sport in the games, chiefly, one imagines, because they are the portion which is most intimately connected with the ancient festival; and perhaps, secondarily, because athletics, in their regulations and their practice, are the most internationalised of all sports.

Association football vies with them in universality and, judging by gate receipts, outstrips them in popularity; but this sport was only introduced in 1908, has been the subject of bitter controversy in connection with the question of amateur status, and, whilst retained

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in 1928 because of the revenue it brought in, has been eliminated, probably wisely, from the programme for 1932.

The sport which ranks nearly equal with athletics is swimming, which for both men and women (with reservations as to the strain which excessive competition may involve in the case of the fair sex) is admirably suitable as an Olympic sport, providing, as it has done since 1908, clean competition under well-defined laws among athletes from all over the world.

Unfortunately one cannot write so enthusiastically about another sport, practised by the Greeks under different rules, namely boxing. To this event, and some others which have proved unsatisfactory (*e.g.* fencing), further reference will be made when an attempt is made to estimate the value and achievement of the Olympic movement. It is sufficient here to note its inclusion since 1908, the year which saw introduced some of the sports which lapsed after 1896, namely cycling, wrestling, rowing and gymnastics. Weight-lifting, polo, lawn-tennis and the modern pentathlon were held in 1908 for the first time. Of these sports, cycling has proved on the whole successful, but by no means as popular as pure athletics ; rowing has attracted many splendid crews and individuals, but has suffered somewhat from the difficulty of providing courses suitable either for the competitors or spectators, and also from questions concerning amateurism. Lawn-tennis, already well catered for internationally by Wimbledon and the Davis Cup Competition, was sensibly dropped after 1924 ; and the other sports have their votaries and vicissitudes, but only slight general appeal.

In desultory fashion also have been held Rugby football, yachting, riding and hockey. Rugby football was never supported by Great Britain, and was wisely abandoned in 1928 as not being of universal interest, especially in July. Hockey was included with success

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in that year, taking place in May, when a large entry testified to the expansion of the game on the Continent and a keen competition was won by the All-India team.

Winter sports, *i.e.* ski-ing, skating, tobogganing, have also proved an attractive addition to the last two programmes ; but their value is limited, owing to the exceptional opportunities given to mountain peoples to practise the sports, in which few other races can take part, and the influence even upon them of the different climatic conditions under which the sports are held, and which render ski-ing, for example, a different art in Switzerland from what it is in Norway.

One must also mention an historic revival—the art, literary and musical competitions. Few people pay much attention to the results of these competitions nowadays, but they are of significance as perpetuating the Greek spirit ; and one may perhaps venture to hope for their greater development and better support as it is more generally appreciated that art and literature, music and religion contribute in the most signal manner to the welfare of mankind.

Any attempt at a comprehensive account of the results of the respective modern Olympiads would be out of place in this volume, and those who desire full information are directed to the Official Reports which appeared after the several celebrations. One may, however, allude briefly to some of the outstanding performances at the various festivals as being indicative of the development of the movement or of historical interest ; and such allusions must in the main be confined to track and field athletics, which are generally conceded to be the most interesting, as they are the most ancient sport included in the modern games.

Although the first modern games were held in 1896, their real athletic significance only became pronounced when they were celebrated in London in 1908. At Athens in 1896 the shape of the track militated against good performances if the watch be taken as the criterion

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of excellence ; and the representation of the nations was small. The United States had a preponderance of successes ; Great Britain won the 800 and 1500-metre races, testifying thus early to the national genius for middle-distance events ; and very appropriately a Greek, Loues, won the Marathon.

The Paris Olympiad in 1900 likewise emphasised American superiority, which was largely contributed to by the achievements of Alvin Kränzlein, an undergraduate from the University of Pennsylvania, who won, on grass, the 60-metres flat, the 110 and 200 metres hurdles, and the long jump. Great Britain again won the middle-distance events and two others, but the number of competing nations remained relatively small. This was even more marked in 1904, when few countries, indeed, and Great Britain not among them, could find the time or money to send teams across to St. Louis, where Americans swept the board. At the Panhellenic meeting in Athens in 1906 Europe succeeded in lending proper support, and Sweden became prominent for the first time ; but it was left for the 1908 Olympiad to give that universal importance to the movement from which it has never declined.

As has been seen, at this celebration many of the sports which compose the present programme and have not proved an unmixed blessing therein were introduced. To render the programme unwieldy by including sports for which there was no universal desire or standard code was scarcely compensated for by the increased number of competitors and their opportunities to fulfil the ideal objects of the founder. It is to these less universally popular sports that much of the blame for the incidents which have from time to time marred the Olympiads must be attributed ; and one cannot help regretting that the modern games were not preserved more in conformity with the ancient, and that sports of limited interest, such as polo or yachting, and those already possessing international tournaments, such as lawn-

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tennis and football, were ever introduced, only, in several cases, to be rejected after unsatisfactory trial.

However, the 1908 programme was packed, and some magnificent performances were recorded. Great Britain did poorly in track and field athletics, despite the success of Lieut. Halswelle in the 400 metres, of the South African, R. Walker, in the 100 metres, and of the Canadian, R. Kerr, in the 200 metres, and blushinglly admitted the overwhelming superiority of the Americans. On the Marathon day over 100,000 people saw the dramatic and tragic collapse of the Italian Dorando, who, easily first at the Stadium gate, almost fainted in the last few yards, was assisted, and, of course, met with disqualification.

The next Olympiad, at Stockholm, saw pre-War athletic talent at its zenith. In only one event besides the 4 by 100 metres relay was Great Britain successful, and that was a startling surprise, namely the 1500 metres, which the famous Oxonian, A. N. S. Jackson, won in record time, after an amazing final spurt against four of the finest milers America has produced. The Americans again completely dominated the sprints and hurdles, and the subsequent world's record-holder for both the quarter and half-mile races, J. E. Meredith, prevented Melvin Sheppard, by only a yard, from repeating his 1908 victory in the 800 metres. Finland also leaped into prominence through the remarkable success of H. Kolehmainen over the French crack, J. Bouin, in the 5000 metres race; two South Africans, M'Arthur and Gitsham, finished first and second respectively in the Marathon; and Sweden did extremely well in the field events and cross-country.

The Sixth Olympiad, planned for Berlin, was never held; and then, preserving the sequence of dates, but prejudicing the still war-worn countries, the Seventh was celebrated at Antwerp in 1920. This time American ascendancy was sternly challenged by the Finns and Swedes, whilst A. G. Hill's magnificent

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double in the 800 and 1500 metres, P. Hodge's steeplechase, and the 1600 metres relay race were prizes which assisted to restore Britain's self-confidence and prestige. Among the Finns, H. Kolehmainen, winner of the Marathon, and the youthful Paavo Nurmi, who won the 10,000 metres and cross-country and was second in the 5000 metres (wherein the Frenchman Guillemot obtained his *revanche* for the 10,000), as the first of his wonderful exploits in the games, are to be commemorated for their achievements on the track, whilst five others won various field events; and although the Swedes only won one event, they were placed in almost all. The walking of the Italian Ugo Frigerio and the high hurdling of Earl Thomson, a Canadian who still holds the world's record of $14\frac{2}{3}$ seconds for the 120 yards hurdles, were also outstanding performances.

The Eighth Olympiad, it is generally conceded, was dominated by the spell of Nurmi. His remarkable victories in individual and team contests—he won the 1500 and 5000 metres races, the cross-country and the 3000 metres team races—caused him to be regarded as almost superhuman; and his prowess both at the Olympic Games and on subsequent occasions has been commemorated in his native land by the erection of a statue in his honour. And yet, but for him, another Finnish athlete, W. Ritola, would have been acclaimed as the greatest runner the world had ever seen. Second to Nurmi in the 5000 metres, the team race and the cross-country, he won the 10,000 metres and the steeplechase as he liked; and his performances, together with those of Nurmi and the victory of Stenroos in the Marathon, gave Finland the right to claim supremacy on the track.

The United States and Great Britain divided such events as remained, the former winning both hurdles, both relays and the 200 metres, and the latter the 100, 400 and 800 metres. These British successes by H. M. Abrahams, E. H. Liddell and D. G. A. Lowe

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ranked high among the performances at these games. To Abrahams fell the honour of being the first Englishman to win the Olympic sprint, and in so doing he thrice equalled the Olympic record; whilst Liddell of Edinburgh, to the skirling of the bagpipes, broke the Olympic record for the 400 metres.

It is also interesting to note that Great Britain had one or more men in the final six in each track event, and that this achievement was not quite equalled even by the United States, which figured in every final but in two events failed to obtain one of the first six places. By way of contrast, however, the Americans won six field events and the pentathlon, and secured innumerable places, whilst Great Britain gained one third and one sixth. The United States, in fact, proved well-nigh irresistible in the field, Sweden being much less prominent than formerly and the distance races marking Finland's effort. As for the other nations, including the Dominions, according to the statistics appended to the B.O.A. Official Report on the 1924 Olympiad, the percentage of points which they gained was 21 per cent., divided among thirty-seven nations.

The Ninth Olympiad at Amsterdam witnessed a better balance of national strength. It was memorable for the re-admission of Germany, whose fine team would have secured fourth place under the old system of classification of nations by points, which had, however, very wisely been abolished by the I.O.C. in 1925.

Perhaps the greatest surprise was the amazing success of the British Empire teams, particularly the Canadian. Not only did a 19-year-old schoolboy, P. Williams, win both the 100 and the 200 metres for Canada, but his team-mates were second in the 400 metres, fourth in the 800 metres and fifth in the 200 metres. Of the South Africans, S. J. M. Atkinson won the high hurdles after his compatriot, G. C. Weightman-Smith, had set up a world's record in a heat—a remarkable performance considering Atkinson's age as a hurdler, for he had been

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beaten by inches only in 1924—and another was fifth in the 100 metres. Moreover, Dr. O'Callaghan of the Irish Free State won the hammer. The Mother Country, although enjoying advantages in the matter of proximity to Amsterdam and in training methods, did not attain quite the same general standard as in 1924, partly because of the higher standard of competition ; but she did have the satisfaction of winning two events and of being second in both sprints. Lord Burghley broke the series of American successes in the 400 metres hurdles, and the 800 metres was won by D. G. A. Lowe.

Allusion has been made to the German effort, which, despite its excellence, occasioned some disappointment to that nation. It had been generally anticipated that the sprint events would be fought out between the Americans and the Germans ; but in the finals the Germans took two third places and a sixth and the Americans two fourths and a sixth. The Germans finished third in the 400 and 800 and fourth in the 1500 metres races and also secured second place to the Americans in both relays ; and they were placed in several field events. Surely a fine record for a young and relatively inexperienced team !

The field events were again dominated by the United States. They won five ; in all save one they had three men in the first six ; and these facts, coupled with their victories in the relays and that of Barbuti in the 400 metres, and their many placings in every track event except the 1500 and 10,000 metres, should dispel once and for all the charge of failure so ignorantly and unworthily levelled against them.

Scandinavian successes have become the rule at the Olympic Games, and the Finns showed their usual consistency in their specialities, long-distance running and the throwing events. For the third time Nurmi dazzled all beholders with his greatness, for although he won the 10,000 metres only, he was second in both the 5000 and the steeplechase—an astounding mixture of events.

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Ritola also proved to be almost as wonderful as in Paris, winning the 5000 and being second in the 10,000 ; and new blood to supplement the efforts of these two athletic giants, now, alas, belonging to the old guard, was found to win the 1500 metres and the steeplechase for Finland.

The apparent decline of Sweden in 1924 proved to be illusory and with a first, two seconds, a third and two fourths she had cause to be content ; and even France, who met with rude disappointment, gained some solace from the victory of her Arab, El Ouafi, in the Marathon and a second in the 1500 metres.

For the first time also the East played a prominent part in the games and forcibly brought home their complete universality. The Far-Eastern Olympics, to which much of the credit for the advancement of the Olympic idea in the East must be attributed, are treated of elsewhere, and one is content here to mention the successes of Eastern competitors in the games at Amsterdam. Gallant Japan achieved glorious renown. M. Oda won the hop, step and jump ; two Japanese were fourth and sixth, respectively, in the Marathon ; another was sixth in the pole jump ; and yet another fourth in the hop, step and jump. And a Philippine Islander was placed fourth in the high jump.

Finally, the Ninth Olympiad was the first occasion of the inclusion of women's events in the track and field section of the games. One is compelled to regard this as a mistake, although the I.A.A.F. subsequently approved by a small majority their inclusion in the programme for 1932. The performances of the women at Amsterdam were undoubtedly excellent in their class, and the contestants most courageous ; but it was all a terrible anticlimax to the brilliance of the men. On æsthetic as well as athletic grounds one would prefer to see women's events reserved for a Women's Olympiad, as at Stockholm in 1925, if held at all ; and for reasons set out elsewhere in these pages one is inclined to deprecate their competition anywhere.

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Before leaving the subject of the Olympic Games it is pertinent to attempt to estimate their achievement, to determine their significance, and to contemplate their future. The present enthusiasm for athletics is demonstrated nowhere more forcibly than in the post-War impetus given to the Olympic Movement which now embraces the world. Not only has the representation at the Olympic Games increased from twenty nations and 2000 athletes in 1908 to forty-five nations and over 6000 athletes in 1928, but also in the Far East, in Africa, and in South America subsidiary regional Olympiads have been inaugurated. The objects of the games have already been sufficiently explained, and it is evident that the internationalisation of sport is a *fait accompli*. It is submitted that the influence of games, and particularly of the Olympic Games, is potent in the cause of peace, engendering as they do a universal spirit of sportsmanship.

Experience of international competition and of the Olympic Games has convinced many people of the reality of the friendships which may be and indeed have been formed between rival national teams and their members. The difficulties hindering exchange of thoughts and ideas are less evident in games than might be imagined. Language, for instance, is by no means the insuperable barrier that one might expect. Admittedly such contacts do not carry one far intellectually ; but it is fair to suggest that recognition of the fact that nations other than one's own have similar ideals of fair play and sportsmanship kindles respect for people hitherto considered alien, and tends to bind nations closer together. If one has learnt to trust a man when playing a game, progress has been made towards trusting him in more serious walks of life ; and surely no one will deny that trust is the corner-stone of peace.

Critics can, of course, adduce instances of discord arising out of the Olympic Games, and one must not shirk the fact that some forms of sport do suffer at

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present when internationalised. Apart from the obvious fact that it would be demanding perfection to expect 6000 men never to disagree during a fortnight, their nationalities and temperaments being so diverse, it is significant to note that almost every recent instance of bad sportsmanship or ill-feeling has arisen in a sport which depends for its decision almost entirely upon the verdict of a referee, as, for example, in the so-called defensive sports (*i.e.* boxing, fencing), which might be better omitted from the Olympic programme, or upon the interpretation of rules not yet properly standardised, *e.g.* the definition of walking in that anomaly, the walking race. Certainly no incident marred either the track athletics or the swimming (except water polo) in 1928.

Failure to play the game in the right spirit may depend upon two things. It may be due to a reversion to unfair tactics, in which case ostracism will inevitably ensue. Or it may originate in the novelty of games-playing, in the fact that people unused to the traditions of games require educating therein. In this case it is the duty and the privilege of those to whom games and their codes are second nature to play with and teach the newcomers. And not only players, but spectators also may learn to play the game and respect the decision of the referee, for it is safe to say that quite two disturbances out of three are caused by the spectators. The remedy lies in proper education of the public to respect the referee's verdict, and in the endeavour to provide facilities for more people to play games and so understand their spirit. And another powerful influence for good should spring from a recognition by women of the part they can play, not only in their own games, but among their men friends, by insistence upon true sportsmanship and nobility.

A criticism sometimes levelled against international games is that they tend to provoke embittered national rivalry; but if this be so—and there is scant evidence of it—it is due to the failure to retain a proper perspective.

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If, unfortunately, it be forgotten that games are to be played as games, joyously, and too great stress is laid upon the importance of winning instead of upon the way in which the game is played, then admittedly there is a danger in international athletics. Excessive specialisation in order to achieve superlative results, for example, cannot be commended, although scientific study in order to play better is consistent with the primary object of games, namely to create *mens sana in corpore sano* and to provide recreation and pleasure. The safeguards against these dangers, however, lie largely in the hands of the competitors themselves, for if they are animated by a proper spirit of athletic idealism—which one ventures to think has been the case since 1918, and should be the heritage of future generations—they will meet in friendly opposition, imbued with a sense of true sportsmanship and mutual self-esteem.

They will be patriots ; but patriots of the kind held up to praise by Dean Inge in his sermon to the delegates at the Assembly of the League of Nations in September 1928, "loving their country, and proud to make it honoured, respected and even beloved by other nations." Men can go out in sport even as in politics to fulfil the Dean's exhortation : "To try to understand the point of view of other nations, and to help their countrymen to understand it. To avoid expecting too much, and yet to remember that as ice melts at a certain temperature so does the human heart. Without quixotically surrendering important interests, to look out for opportunities of generous conduct towards foreigners and foreign nations." Those who have witnessed international matches, and particularly those who have attended the Olympic Games, realise that such opportunities exist and are seized.

CHAPTER III

INTERNATIONAL ATHLETICS

Section 1.—Europe

A PROMINENT feature of post-War athletics has been the vast development of international competition. The merits and dangers of this advance, swept forward upon a veritable wave of enthusiasm among peoples determined henceforth to think internationally, were discussed in the last chapter, and one is only concerned here with its historical aspect.

On the continent of Europe athletics was not generally popular until the twentieth century; and it was just prior to the Great War that regular international athletic matches were instituted. The movement lapsed, of course, during the years 1914-19; but the Seventh Olympiad at Antwerp gave it a fresh impetus, and Europe is now almost honeycombed with international matches of all varieties, whether between countries, cities, clubs or individuals, whilst no country is without its annual national championships.

In control of all these contests is the International Amateur Athletic Federation, upon which all the national governing bodies of athletics, such as the A.A.A., are represented. At its congress in Geneva in 1921 the Federation, besides settling the Olympic programme, adopted a standard code of rules to govern international competitions. At a later date the Federation established strict regulations to control tours abroad by clubs and individual athletes, stipulating that all invitations and financial arrangements must be made through the governing bodies of the countries concerned, and with their

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sanction, and limiting the period of residence abroad for which expenses might be paid to twenty-one days per annum, days spent in travelling or accompanying a national team being excluded. In Great Britain competition with foreign teams is controlled by the Athletes To and From Abroad Committee. Permission to compete abroad must be obtained from this Committee, which requires that the invitation, through the A.A.A., to a club or individual shall be sanctioned by the governing body in the foreign country and that all payments be made through the A.A.A. Similarly, no foreigner may compete in Great Britain without a guarantee of his status by his governing body, and expenses may only be paid to such individual or to a team by permission of the A.A.A.

Besides the Scandinavian countries, France may be considered as the pioneer in the sphere of international athletics. The first athletic meetings in that country were organised about 1886 by the Racing Club de France and the Stade Français, two clubs whose fame to-day is uneclipsed ; but it was a quarter of a century later before matches with Sweden and Belgium were begun, and only in 1921 was the fixture with England instituted. This match of three a-side in each of twelve events, points being scored on a 5, 3, 1 basis, with 3 for the relay, has only once (in 1925) resulted in favour of France ; but on no occasion has the margin been large. In Olympic years the contest is not held ; but between the games it is the most important match in which England competes, and the competition for the "Coupe de Fraternité" always arouses the keenest enthusiasm in France.

Switzerland and Germany engaged in a triangular international with France in 1926 ; and since that time France and Germany have held an annual match, in which the Germans have proved victorious. Despite these reverses, the French nation boasts many fine athletes and *le sport* is undeniably popular : one ventures

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to suggest that with a slight modification of training methods and more inter-club competitions to encourage the rank and file her representatives will achieve even greater honour than their already not inconsiderable portion.

Conspicuous amongst the revivalists has been the German nation. Debarred until 1926 from participating in open international competition, their representatives at the A.A.A. Championships and in the match with France and Switzerland in that year met with remarkable success, indicative of the new impulse animating the German people. No one who has travelled in post-War Germany can have failed to be impressed by the passion for physical culture and sport of all kinds; and the splendid stadia, often erected as a singularly valuable type of War memorial, bear witness to the keen pursuit of athletics.

Further evidence, if it be needed, is afforded by the new prominence given to physical culture in schools and colleges. The German Students Union has before it the ideal that every student shall be compelled to take physical exercise, that every school shall have a physical education department, and that representatives of these departments shall form a central body to organise and control inter-school matches and championships. A fine ideal if carried through sympathetically; and one hopes that the zeal of those directing the movement, and of those responsible not only in schools but also in clubs and Universities, will not blind them to the fact that games cannot be mechanised and still retain their value, and that individuality is vital in sport, which must remain a recreation, not become a semi-political activity.

Before the War, track and field athletics had not been extensively practised in Germany, although one of the world's greatest middle-distance runners, the late Hans Braun, came from Munich. Since 1918 its devotees can be numbered by tens of thousands. The seven years

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of preparation before admission to the I.A.A.F. and international competition proved fruitful indeed, as the many brilliant successes and world's records of such champions as Dr. Otto Peltzer testify. It was in 1927 that British athletes from the Polytechnic Harriers and the Achilles Club paid the first post-War visit to Germany; and the meetings in which they appeared afforded much pleasure and an invaluable bond for the subsequent reunion at Amsterdam. From the British point of view—and, one believes, the German also—only one thing further is to be desired: that is, an annual international between the countries, or, if it be preferred, a triangular match, with France as the third contestant.

Switzerland and Italy are also keen supporters of international athletics; and the latter country, where walking is so popular, has a match each year with Hungary, and was host, in 1927, for the International University Games, which form a branch of the work of the International Confederation of Students (C.I.E.). This celebration, among students and ex-students up to a certain age, was renewed in Paris in 1928, Germany and Great Britain entering for the first time. Given a definite organisation, a strict age limit, and biennial meetings, this movement may become a useful adjunct to the work of the C.I.E. and an important feature of international athletics. For that the possibilities attached to such reunions of youth are real is evidenced by the meeting organised in Copenhagen in July 1927 by the Y.M.C.A., in which no fewer than 400 selected athletes from the Y.M.C.A. organisations in seventeen countries took part.

The younger athletic nations, notably Hungary, Czecho-Slovakia and Poland, are enthusiastic and have achieved a high standard. The Hungarians are excellent all-round athletes who staged regular international and inter-club meetings even before 1914; and since the War teams from Oxford and Cambridge have twice visited Budapest. The educational activities of the

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Czechs have been mentioned elsewhere, their system of Sokols corresponding in some degree with the institutions for Leibesübung in Germany. Only the Sokols have a wider scope; they are recruited from all classes of the population, and they organise athletics for women as well as men. In Poland, athletics is not only popular; it is a Government concern. In 1927 a National Department for Physical Education was established. It was charged with the provision of stadia and instructors, and with the re-organisation of physical culture; and its work has been supported by all, from the president down to the youngest novice in athletics.

The Scandinavians hold their Landskamp; and big club meetings, to which individual athletes from all over Europe are invited, are held annually in Oslo and Stockholm. This type of international meeting is, indeed, exceedingly prevalent on the Continent; and another interesting type of international of recent innovation is the inter-city match, *e.g.* Berlin-Vienna, Budapest-Paris.

The most astonishing progress has come, however, from Finland. Celebrated before the War on account of the magnificent performances of H. Kolehmainen, and the second place at Stockholm in the Fifth Olympiad, this country swept into prominence in 1924 when in the Paris games her representatives, headed by the remarkable Nurmi and Ritola, cleared the board in every track event above 800 metres, the cross-country and the Marathon. Cross-country running, it may be observed, was formerly almost the preserve of Englishmen; but the Finns always used to beat them in the games, and in the annual international match between England, Scotland, Ireland, Wales, France and Belgium, the French team has frequently inflicted defeat upon them too.

Section 2.—Asia and South America

Before tracing athletic development in the Dominions and the United States, one may venture upon

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a prophecy based upon the visit to England in 1928 of a team from Waseda University, Tokio, which competed with the Achilles Club prior to the games, at which several of its members greatly distinguished themselves. The natural genius of the Japanese for field events is evident; the inspiration afforded by these contests in Europe may lead to the creation of a new athletic "power."

And not the Japanese alone of Eastern races have an interest in athletics, for since 1913 China and the Philippines have joined with Japan to hold Far-East Olympics, which deserve more than a passing reference. They are now a great force in the life of the East; they have helped to bring together the people of three nations without rousing their racial antagonisms, and their scope may become yet wider; they have encouraged the practice of physical culture among people who until recently knew little of open-air team games and certainly did not appreciate their value; and they have strengthened the ties binding Asia to the Western world.

After the formation of a Philippine Islands Amateur Athletic Federation, a Far-Eastern Championship Meeting was initiated in 1912 between Japan, China and the Philippines, and restricted to natives of those three countries. The first set of games was held at Manila in 1913 and won by the Philippine Islands; the second at Shanghai two years later was won by the Chinese; the third in Tokio, when the number of competitors had increased to 350 as compared with 175 at Manila, and when, as on the previous two occasions, the home team proved successful.

Meetings were subsequently held biennially in each country in rotation, the last being at Shanghai in 1927, when Japan was the winner; and the games have now been stabilised for every fourth year, beginning at Tokio in 1930 and passing to Manila in 1934, and it is proposed to invite the participation of British India, Java and Siam. The Far-Eastern A.A. is closely associated with

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the I.O.C., which recognises the work done in the East and appoints one of its members as a special delegate to each celebration of the Far-Eastern games.

The South American peoples have also taken seriously to sport, and now hold an Olympiad of their own. The fifth biennial South American Championships, as they are called, took place at Santiago, Chile, in April 1927. Chile (whose representative was second in the 1928 Olympic Marathon), Argentina and Uruguay competed, and the Chileans proved successful by a narrow margin. Moreover, Brazil, Peru, Ecuador and Mexico have been represented at the Olympic Games.

Section 3.—The British Dominions

Reverting to Britain and the Dominions, it has been already indicated that Irish athletics have led a chequered existence; but the love of the game and particularly the field events has always remained strong in Erin, and for many years most of the records in the jumping and throwing events were held by Irishmen or Americans of Irish descent. The Celtic race has always possessed a natural aptitude for the high jump, hammer throw and shot putt, which may be partly attributable to the superior elasticity of Celtic muscle as compared with the Saxon. Certainly the throwing events have been more ardently practised by the Scots and Irish than by the Sassenach, and it is to the Scots that is due the modern method of throwing the hammer. But perhaps the most popular, certainly the most spectacular, feat of strength and skill in Scotland, at all events at the various Highland Games, such as those held at Braemar, Aboyne, Oban for many years past, is tossing the caber.

Since 1921 the Irish Free State has had separate representation on both council and field in international affairs, and the sport is controlled by the National Athletic and Cycling Association of Ireland. Aided by two successful matches against the Achilles Club in

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1926 and 1927, when close contests roused Irishmen to heights of athletic enthusiasm never known before, Ireland competed with distinction both in the Triangular International of 1927 and in the Olympic Games of 1928; and there can be no doubt that athletics is increasing in favour. Another innovation was the re-institution in 1924 of the ancient Tàiltean Games, organised on the lines of the Olympics, and for which the eligibility rule seemed to be the possession of one drop of Irish blood, so that a host of good citizens of other countries contrived to bring the first meeting, and also the second in 1928, to a decidedly happy issue. The third celebration is fixed for Dublin in 1931.

Although the Scottish A.A.A. hold their own championships, they combine with England in international competition. The Highland Games are largely professional, and amateur athletics has only a limited following. The foundation of the Atalanta Club in 1925 has done much, however, to stimulate interest. This club is open to past and present members of the four Scottish Universities, its primary object being to foster Inter-'Varsity athletics. In pursuit of this aim it has held matches with the Achilles Club and the I.V.A.B., and it has already achieved a leading position in Scottish athletics.

The development of athletics in the United States and in the British Dominions beyond the seas has certainly kept step with and in the former outstripped that in Great Britain. In the Dominions, with their small and scattered populations, the extension of athletics is no easy matter. In the larger areas, such as Canada and Australia, only a few meetings can be organised each year, except among the citizens of each large town; and this hinders the acquisition of the experience which only competition can provide. On the other hand, it prevents excessively frequent racing and its attendant dangers, staleness and exhaustion. Despite the handicaps of distance, Canada, New Zealand, the several

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provinces and States of South Africa and Australia, all hold annual championships, and there are Australasian championships for which New Zealand and Australia combine. Each of these Dominions and also India has separate representation in the Olympic Games, and has a good record therein, particularly Canada; but they all unite with Great Britain to compete for the Empire against the United States of America in the relay match held immediately after the games.

A proposal is now on foot to institute Empire Games, restricted to Great Britain, the Dominions, India and the Colonies. Hamilton in Canada has been suggested as the first venue in 1930, after which the games would be held every four years in different parts of the Empire. The scheme is certainly attractive, but it possesses several drawbacks which will probably prove insuperable. Such games cannot be regional; they involve great expense and devotion of time in gathering the teams together. They cannot afford as much experience as the Olympic Games, which, incidentally, do much to foster the Empire spirit which these Empire Games are expected to promote; and it would be lamentable if they were allowed to supplant the Olympic Games in the esteem of Empire athletes. Ardour for Empire Games among the members of the British Commonwealth ought not to blind those members to their responsibilities towards other nations.

Section 4.—The United States of America

In America the year 1870 is regarded as marking the commencement of athletic interest, for although the New York Athletic Club was founded two years earlier, it did not hold its first athletic meeting—which, incidentally, was the first in the country—until 1871. Under the auspices of the N.Y.A.C. the first amateur championship of America was held in 1876; four years later the National Association of Amateur Athletes of

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America was formed, and became, in 1888, the Amateur Athletic Union of America.

The A.A.U. controls athletics throughout the United States ; it is supreme on all questions of amateur status, records and licensing of meetings ; and it also controls a great number of other sports, including basket-ball, boxing, fencing, gymnastics, fives, walking, lacrosse, swimming and wrestling. It is divided into eight sectional groups, all of which organise annual district championships, among the most important being those held by the Western Conference A.A. since 1900. It is allied with the Inter-Collegiate Association of Amateur Athletes of America, and also with the Canadian and British A.A.A.

After the formation of the N.A.A.A.A. the organisation of the amateur championships was assumed by that body, and subsequently by the A.A.U. Besides holding senior championships the A.A.U. successfully introduced junior championships in 1900 for those who had not won a first place in certain open championship meetings ; it has instituted senior and junior cross-country championships, and also an open relay championship meeting. Further, owing to the severity of the winter in most parts of the country, athletics cannot be practised out of doors at that season ; and the Americans possess an almost unique institution, namely indoor athletics, for which the A.A.U. hold other senior and junior championship meetings at the end of February and middle of March respectively. Partly on account of the tracks, which are of wood and usually six or more laps to the mile, the events contested are somewhat unusual. The standard programme includes 60, 300, 600 and 1000 yards races, 2 miles and steeple-chase, 1 mile walk, 70 yards hurdles, running high jump, standing high and long jumps, pole vault and shot. The A.A.U. is also guardian of the destinies of women's athletics, to which it applies strict rules as to medical examination, whilst no woman is allowed to

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compete in more than three events in one day, or one if that is a race of over 110 yards; and the Union promotes both indoor and outdoor championships for women.

It is, perhaps, proper to point out at this stage a fundamental difference between athletics in America and in England. In England, athletes are drawn from all ranks of society, and the 'Varsity athletes, excellent though be their quality, are numerically in a minority. In America, the majority of athletes are University men, and their numbers are far in excess of those in England. It is this distinction which largely accounts for two features of American athletics which shall be presently discussed—the prominence of University athletics and of the Inter-Collegiate Association, and the craze for specialisation.

Inter-College athletics in America had small beginnings. Only three Universities competed at the first meeting at Saratoga in 1873; eight in the following year; thirteen in the third. Then in 1876 the I.C.A.A.A.A. was founded; gradually acquired the support of all the leading Universities and Colleges of America; and attained a position rivalling that of the much younger A.A.U.

The Association, in fact, is an independent organisation, governed entirely by its own constitution, bye-laws and rules of competition. Its objects are the protection and encouragement of its members, of whom there are over forty to-day. Membership of the I.C.A.A.A.A. is open to all Universities and Colleges of good and regular standing, the only stipulation being that every member must hold at least one track and field meeting each year, either between the students of the University or College holding the meeting or between those students and others. (Those Colleges which have not obtained admission to membership are now able to join the National Collegiate A.A., founded in 1922, which promotes annual outdoor and indoor championships.) The management of the I.C.A.A.A.A. is entrusted to an

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executive committee consisting of six members and the president, who must be undergraduates at the time of election; they act for one year, and no University or College may have more than one representative on the executive committee. Their deliberations are assisted by an advisory committee of five, who must be *alumni* from as many Universities.

The I.C.A.A.A.A. holds annually an outdoor track and field championship on the last Friday in May and the Saturday following; an indoor championship on the first Saturday in March; also a 'Varsity and Freshmen's cross-country run in October.

The oldest and most important of these meetings is, of course, the outdoor championship, and it is to it that the majority of the members of the Association are attracted. They are entitled to start as many as five men in every event contested, the regulations providing that no man may compete unless he has completed a full year's residence, nor more than four times. The fifteen events are all standard, a 2-mile race taking the place of the English 3 miles, and the 220 yards low hurdles being the same as in the Oxford and Cambridge Sports. Points are scored on a 5, 4, 3, 2, 1 basis: this marks a distinction from the Oxford-Cambridge practice of scoring on first places only.

In the indoor meeting, instituted in 1922, the events are 70 yards dash and 70 yards hurdles (five flights), 1 and 2 miles, high, long and pole jumps, weight, 4 by 880 and 4 by 440 yards relays, and a Freshmen's medley (880, 440, 220, mile); and the rules governing eligibility and scoring are the same as for the outdoor meeting.

These two great Inter-Collegiate Meetings are the climax of what in many cases are two distinctly strenuous seasons for the American undergraduate. The bigger Universities, such as Yale, Harvard, Princeton, Cornell, Pennsylvania and Columbia, hold a regular sequence of dual meets against each other, which resemble in

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their intensity the annual Oxford-Cambridge Sports. Even the smaller Colleges may have two or three annual meets, both outdoor and indoor, and for Freshmen ; and the effect of this competition upon the standard of athletics is considerable. It inevitably develops the University athlete in a way that can only be attained in England by entry in open competition ; for the intra-mural meetings, which the College system permits at Oxford and Cambridge, possess nothing like the importance, and involve not a tithe of the competition, that do the American dual meets. In American Universities, built up almost entirely upon the fraternity system (*i.e.* groups of about thirty men living together), intra-mural sport is impracticable ; were it not for the bias towards specialisation, excess and, sometimes, ultra-seriousness, one would recognise the Inter-University matches as being not only necessary, but also beneficial.

Not only in this respect is the American system at variance with the British. In the organisation of athletics there are differences from Oxford and Cambridge, where there is no official control on the part of the 'Varsity authorities. In most American Universities all athletic sports are either under the control of faculty committees or, indirectly, of the *alumni* who finance the games, and the undergraduate committees have little say. Unfortunately, at the beginning of the century the system became corrupt. Games were taken too seriously, *alumni* and undergraduates, and, of course, coaches dependent upon success for their appointments, desired victory at all hazards, and unscrupulous poaching of promising schoolboys and doubtful tactics in the games were evils which had to be checked. In 1906 many of the Colleges, including Harvard, Yale, Princeton and Pennsylvania, agreed upon many reformatory changes and eligibility rules, which need not be further specified here, beyond mentioning that Freshmen were debarred from competition for a year, save against each

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other ; and the high standard and purity of competition ever since have been the object of much admiration. Nevertheless, there still exist problems to confront 'Varsity athletics in America ; and the charge of specialisation continues to be made, not without some ground.

It must be recalled, however, that the American undergraduate is differently situated from his English cousin. His time is more strictly apportioned ; he encounters more competition ; he is usually governed by a stern coach who details him to practise a particular event until he attains perfection. It is still natural for an American to put winning first : it is in the temperament of a young nation. Consequently, he accepts this dictation, which no English undergraduate would dream of stomaching ; and one remembers the astonishment, quickly followed by appreciation, with which an Oxford-Cambridge team visiting Harvard and Yale was received when it was stated that they had no coach with them but were guided by their captain and trained themselves. Of course, more acute competition, especially in field events, obliges Americans to specialise more in order to obtain places in their teams ; but even they are realising as the result of fraternising with English undergraduates that one may enjoy and excel in sport and still call one's soul one's own.

It has been pointed out already that the majority of American athletes are University men, in distinct contrast with the position in England. Many of these upon leaving the University are compelled to retire from competition owing to the exigencies of professional or business life ; and in consequence the number of clubs outside the Universities is relatively small. Those few, it must be observed, rank high ; and such clubs as the New York A.C., perhaps the most famous, as it is the oldest, have wielded a powerful and beneficent influence over the game.

It was in fact through the match between the London A.C. and the New York A.C. in America in 1895, in

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which the home team swept the board, and the matches between Oxford and Yale in London (1894) and Cambridge and Yale in America (1895), that the links between the athletes of the two nations, which had already been forged by the sporadic visits of individual performers, including W. G. George and L. E. Myers, were cemented. In their subsequent history these Inter-Varsity matches assumed a remarkable importance, particularly after the Great War when they played no mean part in drawing the two nations together, and a brief account of their progress is given here.

In 1899 a joint Harvard and Yale team visited London and was defeated by Oxford and Cambridge by 5 events to 4; two years later in New York the Americans had their revenge, 6-3; and they won by the same margin in England in 1904, when their superiority in the sprints and field events outweighed the English strength in the longer distances. After rather a lengthy lapse, Oxford and Cambridge again entertained the Americans in 1911, and won 5-4, taking the sprints for the first time; and since the re-institution of the meetings in 1921 the match has become biennial in each country in turn. At the Harvard Stadium in 1921 the Americans overwhelmed Oxford and Cambridge by 8-2, and seven new records, including a world's record in the long jump, were established. Two years later, at Wembley, Oxford-Cambridge won by $6\frac{1}{2}$ - $5\frac{1}{2}$, the programme having been enlarged; in 1925, at Harvard, there being a tie on first places, Harvard and Yale obtained the verdict on seconds; and in 1927, at Stamford Bridge, Oxford and Cambridge again proved successful, this time by 7 events to 5.

Meanwhile, a similar series of matches with Oxford and Cambridge had been inaugurated by Princeton and Cornell. Princeton had beaten Oxford at Queen's Club in 1920 by 6 events to 4; and when the joint Oxford-Cambridge team was in America in the following year they met and tied with a united team from Princeton

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and Cornell. Four years later, at Atlantic City, the English Universities won somewhat easily by $9\frac{1}{2}$ events to $2\frac{2}{3}$; but in 1926, in London, they were successful by the narrower margin of 7-5.

Before leaving this account of Inter-'Varsity athletics allusion should be made to the Penn relays, at which both Oxford and Cambridge have several times competed with success. The University of Pennsylvania was really responsible for the application of the relay idea to amateur athletics; and their famous inter-collegiate and inter-scholastic relays were first held as long ago as 1895. In 1914 the most sensational race of its kind ever run was the 4 miles relay which the Oxonian, A. N. S. Jackson, won on the post from Louis Madeira of Pennsylvania, a victory even narrower than that so closely gained by Cyril Ellis over Lloyd Hahn in the 4 miles in the British Empire v. U.S.A. match in 1928. After the War Oxford and Cambridge sent across a joint team which won and set up a world's record for the 2 miles relay; since 1922 an almost annual interchange of visits has occurred, in which the English Universities have had perhaps more than their meed of success.

Finally, one may offer a few observations on the extraordinary prowess of American athletes, demonstrated time after time in Inter-'Varsity or Olympic contests. This prowess may be partly attributable to ability, to numbers, to coaching, to competition. It is enhanced by specialisation, to which the English genius is opposed, but which the American accepts under the strain of greater competition. Keenness must also be considered as partly responsible: few Englishmen have the patience or the enthusiasm necessary to spend their days in falling 12 or 13 feet on to the back of their heads, or in being thrown by the hammer! But probably more important than these reasons is the extent to which the sport is developed among schoolboys. The existence of school leagues, of high school games, of inter-scholastic cham-

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pionships, flat, field and relay, and the coaching and eager spirit devoted to the encouragement of juvenile athletics explain much of the skill of the men. The only drawback is the danger of excess, especially for youngsters, and the possibility of their "burning out" before their time. If this be guarded against the system must be considered sound and not unworthy of adoption in this country.

CHAPTER IV

GENERAL PRINCIPLES

FOR two authors who have had the temerity to adopt the simple title of "Athletics" for their book it is certainly fortunate that present-day usage has limited the scope of that term to a considerable extent. If, indeed, instead of applying merely to what is now known as "Track and Field Athletics," it stood as an abbreviation of "Athletic Sports," any generalised discussion on the subject would devolve into a treatise on most of the physical activities of the human race!

It is of interest to note the derivation of the word "athletic," in that it throws a light on what must, therefore, be the inherent underlying principle of all sport. The word is derived from the Greek *αθλεω*, meaning "to contend for a prize." (*αθλομ*). In other words, competition appears to be the corner-stone of the temple of sport. But though the many and composite parts of this temple to-day embody a multitudinous variety of sports, the foundations still remain unchanged, and they are "athletics" in the more or less limited sense as stated above.

For track and field athletics—or, more simply, running, jumping and throwing—must ever hold pride of place among all sports, not only on account of their seniority, but owing to the fact that they or their adjuncts form an essential part of all their subsequent off-shoots. We are told that one of the primary instincts of man is self-preservation, and undoubtedly one of the chief means by which this instinct of escape from danger is operated is by movement—rapid movement combined

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with ability to overcome all possible obstacles—in other words, running, jumping and throwing.

And if, on this basis, our prehistoric ancestors were athletes, it is reasonable to suppose that by now one can recognise some underlying general principles of the sport.

Let us take the key to these as “competition,” the desire to prove oneself superior in some respect to one’s fellow-beings.

As a true ideal this, stated as a bald fact, does not, perhaps, appear to carry with it the right spirit. But on a slightly deeper consideration of the subject it must surely appear that to accomplish this desire in any degree the individual must be possessed of, and must develop, qualities—not only physical, but also intellectual and, even more important, moral—the acquirement of which is a process that must in all fairness be held very largely responsible for the progress of civilisation.

Perhaps a brief consideration of each of these various groups of “qualities” may serve to show wherein lies the intrinsic value of athletics. At the outset it must be fully realised that it is not any one of the component parts in particular but the composite sum of the ideals, the attributes and the characteristics of sport that make it of general interest and, it may almost be said, vital importance to the world to-day.

Naturally, one’s mind springs first to the consideration of the physical aspect, the aspect which, since athletics is basically a sport involving the exercise of bodily functions in various respects and various degrees, undoubtedly is of primary concern. In view of a theory recently promulgated in the medical world the physical may be considered as having an even greater claim to initial recognition. A group of medical scientists have now evolved the hypothesis that the mind and even the spirit as entities separate from the body simply do not exist. We have in our bodies certain glands, known as the endocrine glands, or glands of internal secretion,

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which, since their precise function is almost unknown as yet, are considerably exercising the minds of the medical world to-day. And it is now put forward that the mind—by which term we attempt to express the outcome of the physiological processes of the brain's activity—is developed and controlled in response to the degree of functioning of these glands. And further, as our moral or spiritual side is the result of our powers of appreciation by the brain, that these glands are indirectly responsible for this part of our make-up also! However this may be—and there is much of proven fact in the theory—athletics demand a physical basis. It is little use possessing all the desire and determination in the world to be an athlete if one is without the necessary physical attributes. But here the question may arise as to what one means by “necessary”; this of course must always be a relative matter. We read of the “born athlete”—the man who comes into the world with sufficient natural ability, sufficient physical perfection to make him always, from the start, superior to his fellows. But it is not to this minority that athletics brings its greatest gifts. It is to the average human being who is possessed of all his physical powers to no abnormal extent and can, by participation in the sport, enhance these powers to the extent that he becomes gradually a better man. In other words, from the general point of view, it is as the means of raising the physical standard *in toto* that athletics has importance: it should be a “health-giver”—the means whereby can come the fulfilment of that very old and hackneyed but very true and valued adage—*Mens sana in corpore sano*.

That this is indeed a very general expression of principle will be evident from a consideration of an interesting fact about which one has often been questioned, namely the rarity of finding what are admitted as the world's greatest scholars, either of history or of to-day, displaying any particular physical prowess. And, again, how seldom has the noted athlete been a man to

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make his mark in the scholastic world. We think that, with a few exceptions, one is bound to admit the truth of these assertions, which superficially seem to point to an equilibrium being maintained between the mental and the physical. And surely it is this equilibrium, this balance that one hopes the sport of athletics will perfect. We would not be without our "super-athletes," we could not be without our "super-brains," but it is the average of the two and the betterment of that average that should be aimed at, as conducive to the general improvement of man.

One wants the "healthy body" and the "healthy mind" to progress hand in hand, for the two are essentially interdependent. The higher the universal standard of physical fitness can be raised, the greater is the possibility of finding suitable lodging-place for a generally improved mental level. And thus one comes back to the foundation-stone of athletics.

Any degree of proficiency in the sport demands a healthy, clean-living existence, a constant and careful attention to the bodily wants, and a progressive understanding of the rudiments of hygiene and physiological processes.

Naturally one is not supposing that the runner goes on to the track with any of these ideas circulating in his mind, but nevertheless his training and his active participation in the sport all tend to make him an unconscious advocate of these essential principles of healthy community life. And it is by no means always an unconscious supporter. The majority of athletes have, at any rate at the back of their minds, the thought that beyond the amusement, the pleasure and excitement of the sport they are taking good, healthy exercise, and taking it because they realise that the results of physical exertion produce an added efficiency in their work, and an added happiness in their homes and their life generally.

Athletics teaches a man how to make best use of his

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energy, how to apply the physical gifts which God has given him to the best of his ability, and this economic knowledge gained on the track becomes automatically applied to his business and his existence as a whole, thus tending in the aggregate to a higher standard of efficiency. Similarly, the lessons of physical control and of physical co-ordination come to have a general application, whilst in themselves playing their part in the perfecting of that very beautiful machine of nature—the human body.

In their essentials the advantages of athletics accrue from the formation of habits and from the development of method. The more good habits one can form, the more bad habits one can break, the more efficient is one going to be. For what is a habit? It is essentially something one has—a possession incorporated in oneself, a definitely settled and fixed attribute, which, if good, is by way of being a permanent asset. So much is it part of oneself that it does not have to be worried about, and good habits are a gilt-edged security, a capital on which one can develop the business of life without care. The more good habits one can form, the further is it possible to accomplish this development, for they are the things we do or say or know automatically, leaving us free to explore further into whatever sphere of activity may be the particular one of the moment. And from the very beginning athletics engenders the formation of habits. Improvement only comes when one has mastered sufficient minor detail to allow an action to be performed almost subconsciously, whilst the rest of the body is free to concentrate on further means of expansion of effort.

And method, too! How much one learns from track training. Looking back it is possible to see how many hundred and one little things seemed to upset one, until one evolved one's own plans of action, until one learnt to conserve one's energy till the vital moment when every ounce of it was needed. Method and habit—side by side they go, the one dependent on the other, both

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equally valuable possessions, both equally essential products of the training and the exercise of athletics.

Two more attributes that one may call physical should perhaps be considered before one's discussion merges imperceptibly into the mental side of the question.

These are, firstly, stamina, and secondly, speed. Widely apart though they may be, these qualities are really closely related, for surely the maintenance of speed in movement calls for the existence of reserves in energy.

And this opens up the whole question of fitness—a subject more fully dealt with later, but here one wants just to appreciate the good athletics does in inculcating the principles of rapidity of action, which in everyday life become translated into rapidity of thought, and of the power of continuity of action, which applies just as much to all other aspects of life as it does to the physical.

Though so far we have stressed the physical side of athletics, perhaps it is the mental side which holds the real appeal. Even the condition of perfect physical fitness finds its expression in that glorious feeling of well-being which only the trained athlete can truly appreciate. It is the knowledge of confidence in one's physical self rather than its actual existence that one appreciates. And, of course, despite all medical theories, we are still bound to acknowledge to-day the mind as the master of the body. However perfect the anatomical and physiological functions of our body, they are useless without a mind to govern them; however great the physical ability with which one is endowed, it will never reach its maximum possibilities without the assistance and control of the mind. By mind, of course, in this respect one means brain, and in particular, one's conscious effort. For that movement is possible without conscious effort is shown by our breathing whilst asleep, or, better still, by our hearts, which never cease to move for the average threescore years and ten! But it is in the development of our "conscious brains" that athletics plays such a big rôle.

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The physical habits and the physical method referred to above glean their importance chiefly from their automatic production of mental habits and mental method, for it is by these that the benefits of athletics become applied to our general lives. It is the mind which receives and appreciates the feelings and sensations produced by the physical effort involved in athletic competition, and which translates them into such form that they are recognisable either as immediate perceptions of satisfaction or dissatisfaction, joy or disappointment, or as assets of knowledge applicable both locally to athletics or generally to one's whole life.

Athletics demands from beginning to end patience and perseverance ; it calls for the development of will power and of determination ; it teaches judgment and control ; and what six finer mental attributes could one ask for in any man than these ? Essentially the sport is one of self-discipline, and the boy who takes it up seriously is assured of a mental equipment which will stand him in invaluable stead in later years.

Like most other things in life, athletics can only be made a success if one " gives one's mind to it," but the gift is mutual, for what one gives to athletics with one hand is put back into the other, and often with interest added. The successful athlete is the man who knows not only what he is doing, but why he is doing it ; there must always be complete co-operation between mind and body if the optimum is to be achieved, and athletics forms an ideal meeting-ground where both can be suitably exercised in conjunction the one with the other.

Patience and perseverance in acquiring technique, in continued honest training, and in dealing with one's instructors and fellow-athletes ; will power and determination to overcome all difficulties, to put up with all transient set-backs, and to cultivate the knowledge of ability to succeed ; judgment and control in training, in learning to make the most of oneself, in appreciating one's individual advantages whilst at the same time

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knowing one's limitations, and in conquering either one's unnecessary nervousness or one's unwarranted self-assurance. All these qualities and many more are the material outcome of the existence of the all-important mental side of athletics.

Very closely connected with this, perhaps really part of it, is what we have called the moral or spiritual side of the sport. That it has such a side as a separate entity may be a very controversial question, but we prefer to separate certain attributes as being really neither physical nor mental, though admittedly produced by the one and controlled by the other. What can athletics do with regard to the development of character? Surely the points mentioned in the preceding paragraph must in themselves form a very sound basis, and yet there seems something even beyond this, something rather apart from the purely technical side of the question, something which is just the spirit of the Game.

It is a side of which ordinarily we consciously think but little and talk less, and yet at heart it is probably the side of athletics we prize most deeply—the playing of the game as a game for the game's sake! In this respect we revert again to the underlying idea expressed in the word “athletic”—namely competition.

Censure has been levelled at athletics as a sport in that it is essentially so selfish, so much a matter of the individual; but whilst admitting that, until the relatively recent introduction of relay and team races, the team spirit was unavoidably lacking, it must in all fairness be reckoned that this very want was responsible for the production of very much that was admirable in the solo runner. Literally, he certainly has only himself to consider, but surely the development of the right attitude towards one's competitors is almost more difficult to achieve in perfection than the acquisition of the “team spirit.” One does not wish in the slightest degree to belittle this spirit, for it has been the one thing wanting to make athletics as fine a sport as any yet invented, but

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it behoves us to appreciate the intrinsic good that can come to the individual from participation in the sport. It teaches him to be a "sportsman," using that word in its finest and truest sense as the man who enters competition with a smile; who accepts either victory or defeat, whichever may come his way, with the same smile; who competes because he enjoys competing, enjoys the good, clean fun of it; who possesses an abundance of self-confidence flavoured always with a suitable modicum of modesty; who knows that a race is never lost until it is won, and is always a hundred per cent. trier; the man who appreciates the value of the sport in which he is participating outside its merit as a medium of training of mind and body, and who recognises the deeper values of associations formed, of assessing at their true worth the good points and the bad points of his fellow-sportsmen, and learning from both himself; who is ever ready to lend a helping hand to his weaker brethren, either in training or in competition; the man who has pluck, and who never knows when he is beaten.

Of such material are the true sportsmen made—simply innate gentlemen of the track—and it is a pleasant thought to realise that there are many to-day who embody almost every one of these characteristics.

We have said "innate" because this side of an athlete is essentially a part of him as an individual—these attributes are not really those that can be taught to a man; but, on the other hand, they can be brought out if they are there by the associations of the sport, and there are many, also, that can be learnt from athletics, provided always the intrinsic moral basis is there on which to build. It is the case *par excellence* where example is better than precept, and it greatly behoves everyone who has the cause of true sport at heart to inculcate into the rising generation of athletes the ideals of the game—to ensure in as far as is possible that every athlete is not only a man, but also a sportsman.

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And now, having to some small extent dissected into its component parts the sport of athletics, may one be allowed to assemble them all again and consider briefly the relation of the whole to some aspects of this world of ours to-day ?

We have seen that athletics has what may be termed its physiological, its psychological and its sociological sides, and this statement alone is sufficient to prove what an all-encompassing sport it is.

The physiological helps us to attain a higher standard of physical fitness, enabling us to take a fuller and more active part in the lives we have to lead, ensuring a brisk and vigorous youth, and a comfortable passage to a ripper and richer old age than would otherwise be the case.

The psychological gives us a mental training productive of sounder judgment, of greater receptive powers, of quicker intuitions and decisions, of a generally increased aptitude for the meeting of those tasks and difficulties which life presents to each and all of us.

Whilst the sociological enables us the better to understand our fellow-men, to derive a greater satisfaction from ordinary things, to appreciate to a deeper and fuller extent the relative values of those intangible qualities of life which make one live rather than simply exist—in other words, to form our characters and to realise the worth of the process of formation of character in others.

To endow athletics with the production of all these characteristics may be considered by some to be somewhat of an exaggeration, but one does feel that it, perhaps more than any other sport, offers great potentialities, and this because of the individual element which, perforce, bulks so largely. It is the personal characteristics of the athlete which classify him, no matter how much the scientific aspect is grafted on to him. And it is in this respect that the sport becomes so important. For by influencing the individual for his general betterment, so are we tending to improve the whole national standard, and, for that matter, the human standard.

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Thus athletics has come to be an integral part of a boy's education. It is realised that no amount of school work pure and simple will turn out the right type of man, if the qualities to be developed on the playing field are not catered for also. It is not by sitting at a desk adding up figures that a boy learns to become a man worthy of taking an adequate place in the hurly-burly of modern life. It is in the utilisation and development of his natural talent and individuality in the elementary sports of running, jumping and throwing that he learns to be a man—that he learns control of himself—that he learns his dependence on his fellows and yet the power of standing alone—and, above all, that he learns to be a sportsman.

The method by which this knowledge is acquired or instilled has become a matter of vital importance to educational authorities—a matter that has of late in the reconstructional years since the War been very much in the minds of scientists and psychologists alike. For it is now being realised more fully than ever before how much the future of the youth of the world depends upon the complete fulfilment of the old quotation mentioned at the beginning—"A healthy mind in a healthy body." One without the other tends towards the production of an inferior type of man. And hence one finds a world-wide movement to include in any educational curriculum a standardised physical training programme running parallel to the previously existing scholastic one.

This to us in England, perhaps, seems no novelty, for we have now for so many years built up the tradition of sport that it automatically takes its place in the range of our life's activities. And for this reason perhaps it seems perfectly fair to reiterate what one so often hears, that Britain really is the "home of sport." And the sense in which this is said—namely that it is rather the "spirit of sport" than achievement or superiority in sport—is the very thing that gives it such immense value to us as a nation.

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Now that the idea has become so prevalent all over the world, it behoves us all the more to be broad-minded enough to endeavour to improve our standard by learning from those who have been so willing to accept the basis of that idea from us, to honour the spirit of the game which underlies every British sport.

We have been discussing this in such general terms that its application to this particular book may not be immediately evident, but we feel sure that even the most rabid partisan of other sports will admit the greater applicability of pure athletics to the people as a whole.

This national aspect of athletics is one of considerable importance and interest to-day. Every day one hears of the birth of athletics as a sport in one country, the revival of it in another, the growth of it in yet a third—and slowly but surely the time is coming when the nations of the world will find a common meeting-ground in the athletic field, a meeting-ground where it is possible, if not probable, that relatively as much will be done towards the fostering of both national individuality and spirit, and at the same time international amity and understanding, as is now done by diplomatic conferences and international congresses.

This is admittedly an ideal, but an ideal that is possible of more and more fulfilment as time goes on, for with all their present disadvantages and difficulties one feels that the international athletic meetings of to-day are steadily producing the right international atmosphere; and what is more, this realisation is gradually dawning upon those in whose hands lies the national welfare of individual countries.

Bearing in mind this widest of all possible applications of the underlying principles of athletics, it is pertinent to consider briefly the closely related subjects of amateurism and specialisation, and in this consideration it is essential to take the very broadest outlook with regard to these questions in view of the controversies which now so widely rage over them.

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From a purely athletic standpoint one appreciates equally and impartially the actual ability of a runner irrespective of whether he be amateur or professional. Nature's gifts are bestowed upon one individual human being more than another, regardless of what use he ultimately makes of them, and should he decide to use them as his means of livelihood that surely is his own particular concern. The trouble over this question has come in the drawing of the "amateur line," though one would think it was really a very simple matter. If a man earns his living by athletics he is a professional, and probably perfectly content to be so; if he earns his living in some other walk of life he is not a professional, provided always he accepts the results of his achievements in competitions in the form of a tea-tray or a silver cup and *never* their equivalent cash value. If, however, he should receive financial remuneration indirectly from the sport, as, for example, in the cases of the coach and the athletic journalist, then for reasons very hard to comprehend by any average man who is not possessed of a tortuous mentality, the former must—according to present-day rulings—forfeit his amateur status, whilst the latter is perfectly entitled to retain his—surely a most anomalous position.

The dissatisfactions of to-day come from these almost farcical limitations which bind down the definition of an amateur—limitations the inevitable circumvention of which almost necessitates hypocritical subterfuges if the present-day world-wide interest in athletics is to be at all satisfied.

This is by no means a plea for the spread of professionalism. Actually the opposite is the point one wishes to make, but until such time as a much more liberal and broad-minded interpretation is allowed of the amateur status, it seems impossible that athletics will be able to attain to its greatest ideal.

What one would advocate is the widening of the definition to the utmost limit, to allow the greatest

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possible participation in athletics—reckoning it not as a sport to turn out the few super-men, but as a healthy recreation and exercise to produce the maximum number of fit human beings.

The rather amusing aspect of the case to-day is that amateurism is tending all the while to a professional bias. Such actually is specialisation! We have come to think of athletics far too much in terms of its great exponents, we feed on broken records, we look upon the Olympic Games, for instance, as the apex of all athletic achievement—and in so doing we neglect and disregard the far more important, the far deeper aspect of the sport as a field for the development of the many to the betterment of mankind generally.

Athletic achievement has become a god, a god whose clutching hands draw on the few for the eyes of the world to feast on, while forgetting if not actually repressing the many upon whom, after all, our general progress depends. The super-amateurs are tending to make the sport a business, and this is a bias that must at all costs be avoided if the game is to retain its ideals.

It can fairly be said that this monopoly of the advantages offered by athletics is less evident in England than almost anywhere else in the world. This is due to our long acquaintance with the idea of taking sport as a game, the outcome of our peculiar national characteristics, exactly in the same way as these are elsewhere responsible for excessive specialisation in and commercialisation of athletics.

The European countries, to whom athletics is, on any scale, a comparatively new proposition, have gone wholeheartedly into the question, have realised that definite good can accrue to the community from an organised and standardised participation in athletics, and have acted accordingly. The United States, having appreciated their various advantages, particularly geographical and financial, have set out to produce champions—and, incidentally, have succeeded on a wholesale scale—but

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surely athletics in America has tended to become too much of a business, too much the end-all and be-all of many young men's lives instead of simply an advantageous side-line to those lives. The British Dominions, starting from the invaluable basis of the Mother Country's ideals, have suffered less; the Eastern world is still relatively young as regards modern organised athletics; and England, she follows somewhat lethargically (for luckily the old spirit of the game for the game's sake dies hard) in the path of the present-day business-like record-breaking cult of athletics.

None are without their faults; all are deserving of due praise; but let us not, in the hurry and scurry of the struggle to produce ever greater and greater individual perfection, sacrifice or at any rate lose sight of the underlying basic principles of athletics.

We want our athletic "giants" just as we want our great "brains," but we want them as incentives and as examples, not simply as perfected mechanisms through which to advertise. We feel sure that those who have the cause of athletics most deeply at heart will endorse the opinion that if athletics are to retain their very definite ideals they must be thrown open more and more to the average man—to all men! And surely enough, in the process, the great athletes will still be found, without the selfish hot-house production by to-day's specialisation methods.

The sport must be part of youth's education, it must be used to develop the right kind of body governed by the right kind of mind, and embodying the right kind of ideals.

Athletics is a sport essentially for the millions, and only through working in the direction of rendering it available to the millions can it be enabled to fulfil the part for which it is so eminently suited, the part of a power for good in the general improvement of mankind.

CHAPTER V

TRAINING AND EQUIPMENT

Section 1.—Training

IT is natural to suppose that any authors embarking upon the discussion of an already controversial topic do so with a certain amount of trepidation. With regard to "Training," however, over which has raged, perhaps, more heated, persistent and unnecessary controversy than over any other aspect of athletics, we state frankly that we are daunted by no such anxiety; and this because in the subsequent pages devoted to this question we have endeavoured to express all our opinions upon the simple basis of sound common sense!

We contend that for the athlete who trains himself, for the trainer of athletes and also for the writer upon training, common sense is the fundamental basis upon which success depends. Approached from the broad-minded point of view, training in all its multitudinous aspects resolves itself into a relatively simple problem. Common sense has led to the realisation that with regard to training the working unit is the individual, and that every man must evolve and pursue his own system; common sense has brought about the abolition of those hard-and-fast rules of right and wrong and those ancient shibboleths which rendered training in bygone days a period of trial and tribulation. Common sense has shown that the mind requires training as well as the body; common sense has demonstrated the value of applying scientific methods and research to training in theory and in practice, and common sense has taught us that to every still existing rule there are exceptions.

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Training is most satisfactorily divided into general and special. With the latter department we do not intend to deal here, as under each separate event described in subsequent chapters will be found comments and suggestions relative to particular training methods for that event. It is of the subject of general training that we wish to treat by a consideration of the underlying general principles, by a short survey of the more important details of the question, by a few words in regard to those important people in this connection—trainers—and by a brief glimpse at some more pertinent medical and scientific aspects.

1. General Considerations.—What does one mean by training in its general sense? Let us begin with the truism that for each living human being there is a set definite level of physical and mental fitness which he maintains almost automatically, apart from such unaccountable contingencies as severe illness or accident, according to his or her own particular environment, heredity and conditions of living. This may be called the threshold level and of course is subject to wide variation according to the individual. Stepping one way from this threshold comes loss of health and ultimate illness; stepping the other comes the elementary stage of training—training in its most general sense, by which is implied a definite ordering of one's ordinary everyday life. This means that from a health point of view the conditions of one's life are consciously altered and ameliorated within that particular range permissible to each individual. In other words, instead of living an ordinary and possibly slipshod life, one makes conscious efforts deliberately to live a healthy life to as great an extent as means and circumstances permit. These conscious efforts form the rudiments of training. By them one attempts to avoid excesses of any sort, to develop habits of cleanliness and care, to devote a certain amount of time and attention to the improvement of one's physical and mental condition, to give some study to the

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theoretical aspects of the psychological and physiological processes of one's mind and body, to practise a certain amount of self-denial whilst at the same time engendering a spirit of genuine cheerfulness, to be regular, systematic and thorough—in a word, to lead the "simple life."

For the athlete this level of physical fitness should be his minimum—that is, he should never be out of training in this sense, for between seasons of actual competitive effort he should never drop to his threshold value, which amounts definitely to "going soft," but must lead the regular healthy existence discussed above. Then at any time he is prepared, within a short but definite interval, to get fit for actual track competition. And this process of "getting fit" from the already generally sound physical condition consequent upon his leading an average healthy existence constitutes training in the more particular sense as applied to the athlete. It is a process by which the already fit body and mind, capable of fulfilling all their functions truly and well under ordinary normal conditions of life, are prepared to meet the excessive demands made on them by the sudden or rapid production of the maximum output of energy as required by participation in athletics, and, furthermore, to render this production as economic an expenditure as possible by the development of that perfected co-operation of mind and body which is "co-ordination."

The athlete's training, then, aims at the highest possible degree of combined physical and mental efficiency. It is the means by which the healthy individual is polished up into the racing athlete. This aim is to be achieved essentially by exertion—physical and mental—that is, by following out the old maxim that "practice makes perfect." But practice to produce perfection must be persistent and persevering; it must involve close and meticulous attention to all the varied details of training technique; it must be given thought, *i.e.* a man must learn not only what he is doing but also the why and wherefore of it; it demands much patience

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and not a little self-denial ; and of exertion both quantity and quality. Admittedly the golden rule of training is "Never overwork," leave every real exhaustive effort to actual competition ; but, on the other hand, it is almost as bad a sin to do too little. It is necessary to begin slowly and steadily and work up until the optimum amount of exertion for any particular individual as nearly as possible coincides with his possible maximum. And having reached that stage do what has to be done well, do it thoroughly, do enough of it and then be done with it. No training course should ever be attempted in haphazard fashion, but always made to follow a definite schedule. By such systematic and progressive methods unnecessary expenditure of energy is avoided and quantity with quality becomes more and more a feasible achievement.

Let it not be imagined from the above description that training is a strictly rigorous process, not particularly conducive to happiness—in fact, rather a time of trial altogether. In the olden days this was undoubtedly so, as the ancient history of training tells us. The Greeks used to segregate their chosen athletes and put them through a most arduous course of self-denial and self-discipline for months before some particularly big competition. Figs, cheese, bread and meat formed the staple articles of their diet, whilst their exercises included such astounding performances as bending iron rods, carrying and lifting heavy weights, and even taming bulls ! though, oddly enough, they were permitted unlimited supplies of alcohol. Coming to more recent times, when athletics about the middle of last century became an organised sport, training systems were even more rigid, in fact were often definitely injurious and cruel, and even consumption of fluids was reduced to an almost impossible degree, whilst the various deadly ills to which the prospective athlete's body was evidently then so prone were scotched by most drastic methods, of which emetics and severe purges were amongst the kindest.

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To-day, however, training methods seem definitely to have reached an epoch of enlightenment. Though some of the old myths and superstitions are dying hard, the general tendency is to accept no set rules for training, but to treat each individual on his merits, working always on that ever-essential basis of common sense. Every athlete presents a separate and distinct problem, the solution of which as regards training methods he himself or his trainer will only find after careful study and investigation. It is obvious that there can be no panacea for all the ills of lack of good condition and for all types of men. The little man and the big man, the strong man and the weak man, the dull man and the intelligent man, the nervous man and the stolid man—each and all have their own particular requirements. They can all ultimately attain to the same end—the highest possible degree of physical and mental efficiency—but they must travel there by various routes, each route suitable to the type concerned, and hence the foolhardiness of expressing any dogmatic opinion upon some particular point in training or, for that matter, the whole of it.

The mental side of training is one which has become appreciated a great deal more of recent times, and a highly important side it undoubtedly is. The body is really the servant of the mind, and hence, however strenuously one attempts to improve the condition of the former, unless the latter is suitably attuned to the effort but little will result. It is vital that the athlete in training should cultivate, if he does not already possess, the happy, contented disposition. Worry is a factor which must as far as possible be completely eliminated, and the successful athlete should be a cheerful soul, who gets great pleasure out of living for sixty seconds every minute. Anxiety is, of course, another thing, and though usually anxiety does not amount to actual fear, it should be conquered to as great an extent as possible: first, because it is very often the outcome of over-indulged introspective faculties and excessive imagination and

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anticipation ; and secondly, because it necessarily involves a loss of nervous energy, all of which is doubtless urgently required elsewhere. Closely related to the subject of anxiety is that peculiar phenomenon known by the picturesque terms of "the needle" and "getting the wind up." It is a feeling appreciated by the athlete before some important—or, with some, before any—contest. The length of time before varies greatly with the individual temperament, as do also the relative amounts of the two essential factors of the sensation, excitement and nervousness. The former is an asset in that it provides that most necessary eagerness, that feeling of being "on the toes," that means so much at the start of any race. The latter is distinctly a drawback, and is usually an indication either of insufficient or unsatisfactory training, or of too much training, *i.e.* staleness (of which more will be said anon), with its consequent lack of self-confidence. And self-confidence of the right sort is an asset which the athlete cannot afford to be without. It is primarily the outcome of persevering conscientious practice, as will be stressed in subsequent chapters dealing with the particular events. Nervousness, on the other hand, leads to a wasteful dissipation of energy, accompanied very often by an equally disadvantageous sensation of chilliness, the effects of which will be obvious almost before the gun is fired. To counteract in some degree the ill-effects of "wind up" and also, incidentally, to enhance all the good done by training, one cannot do better than recommend the practice of having an understanding friend at hand.

The mental side of training involves also the cultivation of self-discipline and will power, which find their expression in what we recognise as pluck. This, of course, does not imply that the life of the athlete in training must in any way correspond to the rigorous existence of the ascetic, but simply that he must learn to know himself, to become the master of his own

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destiny. Furthermore, there must be developed powers of rational judgment and of relative appreciation of the things one sees and hears. For instance, when listening to a trainer, or when watching an expert exponent of some particular event, one must develop the faculty of weeding out that which is useful to oneself and that which is simply the peculiar eccentricity of the person concerned. In other words, mind and body must be trained side by side, for just as important as the physically fit body is the clear-thinking, capable brain.

2. **Detailed Considerations**—(a) *Diet*.—The question of food in training is probably one of the most worked-to-death subjects of controversy in all the many and various considerations of training. Hence we deal with it first, and before entering into detailed discussion on the matter we should like to submit our opinion that the answer to all questions relative to training diet falls simply under three heads—common sense, regularity and individual preference. On this basis the subject becomes simplicity itself. Food fulfils certain vital functions. We therefore need food. *What* food is a matter entirely for the individual to decide for himself; but when and how he takes this food are matters governed by general principles of common sense.

Let us briefly consider the component parts of an ordinary diet. It consists of proteins, carbohydrates, fats, salts, vitamins and water. The proteins or meaty foods (*e.g.* eggs, fish and meat itself) subserve two highly important functions. They provide energy, and as athletics demands a goodly supply of this they are necessary foods, and almost more important, they replace the waste in the actual tissues. It is doubtless because of these two valuable usages that meat became the staple factor of an athlete's diet. In past days this idea was carried to excess, and the predominance of proteins in the modern athlete's diet is still very prevalent. It must always be remembered, however, that an excess of this class of foodstuffs places a heavy and

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even dangerous strain on the liver and the kidneys, which are chiefly responsible for its satisfactory disposal.

The carbohydrates or starchy foods (e.g. bread, potatoes, cereals, bananas, oatmeal, biscuits, etc.) are, since the athlete wants most of all to derive energy from his diet, really the best foods, for by virtue of their comparatively more simple absorption and assimilation by the body they are capable of the production of the maximum energy in the minimum time. This accounts for the popularity of sugar, which comes in this class, taken a short time prior to competition.

The fats, as exemplified by butter, milk, cream, cheese, etc., are also valuable foodstuffs, in that they also produce energy. But since they are assimilated and incorporated in the body's tissues more slowly and with more difficulty they do not form such a ready source of supply as the two previous groups. They act rather as providing a reserve store of energy which may be called upon in case of need, when the more available supplies provided by carbohydrates and proteins have been exhausted.

Salts and vitamins (in fruit, which also contains sugar, and in vegetables particularly) are also necessities, though required in relatively smaller proportions.

Water, on the other hand, is required in plenty. The fact that it is possible for the human body to subsist on water alone for practically a month shows how vitally important this item of diet is. In contradistinction to the ideas prevailing towards the end of last century, it is now realised that the supply of water to the athlete should be unlimited. It is an excellent plan to start the day on rising with a glass of water, and to end it similarly on going to bed, and in the meantime, but not at meals, when it simply serves to dilute the gastric juice to an unnecessary extent, to drink all one wants. It is preferable that water should be taken rather in many short drinks than in a few large ones, for the latter tend to dilate and distend the stomach, which, besides the bad

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local effect, may, by pressure on the thoracic organs, cause trouble with the respiratory and circulatory functions. Water is a necessity not only for its beneficial effect in generally flushing out the system, but also because it serves to replenish the supplies of the body fluids, through which, around and between the individual cells of our bodies, take place all our vital physiological processes.

The old idea of an athlete's diet has been briefly mentioned above—an excessive amount of meat unaccompanied by vegetables and usually partnered by stale bread—the whole combined with a minimum of fluids. Luckily a more scientific and broad-minded outlook to-day has done away with such a slur on man's intelligence. We now realise that the best diet for an athlete is a mixed diet, embodying all the above constituents in such proportions that they appeal to the individual: for the best guide to a suitable food is appetite. If a man likes his food, it will do him good. Similarly, the best guide to optimum quantity is hunger. As long as a man is hungry he has not had too much, and average common sense will naturally advocate a policy of moderation. The athlete must avoid indigestion at all costs, for this means not only waste of energy which might well be applied elsewhere, but also the risk of similar detrimental effects to these mentioned in considering the drinking of large quantities of water, namely gastric distention and dilatation. As further aids to satisfactory digestion one should attempt always to follow out those two very sound old dicta—"eat slowly" and "chew well"—and to this may be added the advice of, when possible, resting after a meal and thus giving the stomach a chance to do its job without interruption.

Having thus shown the advantages of a diet so balanced as to make good the daily tissue losses and to provide suitable supplies of energy—and with the changes so rung as to appeal to the individual taste—there

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only remains the consideration of the third primary principle—regularity. What a meal consists of is really not nearly so important as when it is taken. We believe that three reasonable and regular meals a day are ample for any man in training. On the day of competition the same policy should be adhered to with discretion. It is equally foolish to run on an empty stomach as on an overloaded one. Previous to a race, a moderated meal, consisting of food known to agree with one (*e.g.* eggs, steak, fish, stewed fruit), with perhaps a little less liquid than usual, and sufficient time allowed for satisfactory digestion—at least two hours—is what is required, while if anything is needed between races, such mild stimulants as tea, coffee or some meat essence are the best to fall back upon.

Finally, in training never worry about the details of diet. Follow the dictates of appetite, use common sense, and stick to regular hours.

(*b*) *Smoking*.—If all the pros and cons of the smoking habit from the athlete's point of view be reckoned up, even the confirmed admirer of My Lady Nicotine will probably admit that the latter outnumber the former by a rather large majority. Undoubtedly there have been, and still are, men who can continue to indulge their smoking propensities and yet produce remarkable and first-class athletic performances. But as ever comes the question, Would not these men have been even more wonderful had they denied themselves this luxury? If in a certain few cases the answer to this may be definitely "No!" these, nevertheless, must form a very small minority indeed. Generally speaking, one cannot see anything good coming to the runner from smoking. The loss of efficiency due to this habit has been estimated at various figures ranging from $\frac{1}{10}$ per cent. to $\frac{1}{2}$ per cent.; and even accepting the minimum, the loss over 100 yards is going to be more than 3 inches, which same small distance has accounted for the winning and the losing of many a good sprint race,

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whilst relatively over half a mile the loss will, even at the lowest estimate, be the best part of a valuable yard.

Some, of course, may maintain that such figures, derived from a more or less purely empirical basis, are misleading, but when one adds to them the known pharmaceutical actions of nicotine, then the balance must definitely sway against smoking. For nicotine acting on the heart produces both a quicker and less effective beat, and also a loss of recuperative power in heart muscle, following severe strain. It acts on the nervous system by blunting one's powers of appreciation, an effect particularly marked in the case of the eyesight if smoking is at all excessive. Again, the carbon monoxide gas produced in smoke has a greater affinity for the hæmoglobin of our red blood corpuscles than has oxygen, and hence in the smoker who inhales there is a relatively smaller oxygen-carrying capacity for his blood, and, as will be shown later, less oxygen means less efficient and less prolonged muscular work. Whilst, finally, nicotine tends to produce a jaded palate and lack of appetite, with the ultimately inevitable sequelæ of gastritis and indigestion.

This, surely, seems a heavy enough indictment to prefer against any habit, especially when, on the other side of the balance-sheet, one can put only a by no means universally accepted sedative effect in times of stress and nervousness.

However, the habit not only exists but flourishes, and in this respect one must put in a word of warning which applies equally well to all bad habits. The process of breaking them must always be gradual, for in the case of the inveterate smoker a sudden cessation of his customary practices may bring evil effects of which irritability and insomnia are but two of the more outstanding.

Into a discussion on the relative merits and demerits of cigarettes and the pipe we do not intend to enter,

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except to state that any alternative is preferable to the pernicious habit of "chain-smoking" of cigarettes.

In general, then, do not smoke ; if you must smoke, smoke a pipe ; if you cannot, do not inhale your cigarettes, and let these be as few as possible.

(c) *Alcohol*.—Any excessive indulgence in alcohol is, for the athlete, always and definitely bad. The idea, which still finds favour in some quarters, of an occasional thoroughly good break in this direction from the strict routine of training is a fallacy—as, indeed, is any measure which has not as its groundwork moderation. With regard to any indulgence in alcohol at all, as usual, one cannot afford to be dogmatic, but this, like smoking, is usually simply a habit, and for the man in training, if not a bad, at least not a good habit.

We have already mentioned two extremes of more ancient times in connection with this question—the Greeks, who allowed the alcoholic cravings of their athletes the fullest satisfaction, and the stalwarts of the middle of last century, who not only refused to allow any alcohol at all, but as far as possible prohibited any fluids whatsoever. One hopes that to-day the common-sense principles of studying the requirements of the individual are indications of a happy mean having been reached. There do definitely seem to exist those people who, in training, are all the better for their daily pint of beer or glass of wine, which seems to act as a tonic, whilst in the case of beer, some actually put forward as an excuse the small food value which it possesses. But one feels sure that, apart from exceptional cases and conditions, similar remarks apply as were made concerning smoking.

Do without alcohol altogether if possible, and if it must be taken, let it be a minimum quantity. In cases of illness and, as will be mentioned later, staleness, alcohol in moderation probably has its place, but it should always be remembered that, like anæsthetics, which, incidentally, belong to the same group of drugs,

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alcohol, though temporarily an excitant, is always essentially a depressant to bodily functions.

(*d*) *Sleep*.—Of all the essentials of a good course of training, sleep ranks with the highest. One quite often comes across the man who says that whatever liberties he takes with himself in other respects, the one thing that tells on him immediately is lack of sleep. And this is easy to understand when one considers that during sleep the activity of all the vital physiological processes is depressed to a minimum, and quietly and gradually the body is able to compensate for the strain of the preceding day, whilst at the same time laying up a store of energy for the morrow.

It is the rest and relaxation, not only of the body as a whole, as we consider it, but of all its individual systems and mechanisms, which are the important factors in sleep. In this respect the value of a daily hour taken off for relaxation, though not necessarily for sleep, and this particularly on a day of important competition, cannot be overstressed.

Much discussion has occurred over the actual length of time one should sleep. This really is of small import—again it is a matter for the individual—but a very useful average is eight hours, with as much of it as possible before midnight, providing one qualifies this dictum with the observation that when one wakes naturally one should get up. Waking is Nature's tip to us that the body is ready to function normally again, and it should be borne in mind that oversleeping, especially if it becomes a habit, has almost as detrimental an effect on the athlete as lack of sleep.

But one more word is necessary with regard to sleep, and this is to point out that sleep without fresh air is almost as pernicious to the athlete as no sleep at all.

(*e*) *Exercises*.—Though exercises pertaining to each particular event are discussed more or less in detail under corresponding chapters, we have felt that exercises in general are of such great importance in any training

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syllabus as to demand inclusion in these general considerations.

By exercise one implies muscular exertion outside the sphere of the particular sport for which one is training. How necessary this was to the athlete was fully appreciated by the ancient Greeks, as has been pointed out above, who insisted on those in training performing most arduous tasks.

As regards the time in the athlete's daily routine during which exercises should be indulged in, one strongly advocates the ten minutes or so before breakfast, whether devoted to actual exercises or to a short brisk walk, and especially if after a cold bath, which just serves to put one's circulation into fine working order. Nothing in any way strenuous should, however, be attempted on an empty stomach. Again, the few minutes before bed at night are good, whilst if no actual athletic training is being done on any particular day, some part of the afternoon of that day should be given up either to a walk, the playing of certain other games such as fives, squash or tennis, or a visit to a gymnasium.

Of all exercises, walking probably finds the most general application. It is, after all, Nature's primary co-ordinated muscular effort, apart perhaps from crawling, and walking in some form or other is of advantage to every type of athlete. It involves the use, without strain, of almost every muscular group in the body, including the very important respiratory muscles. We are inclined to think that the natural breathing exercises coincident upon walking are all that is required in this particular line, and that the so-called set "breathing exercises" tend rather to the production of a chest of fixed capacity, which, of course, is not what is wanted in the athlete who is preparing himself to meet some sudden strain.

Walking also automatically necessitates the consumption of a valuable quantity of fresh air, and at the same time is a very sane and reasonable means of reducing any excess of weight.

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Apart from walking, one may mention among many others such forms of exercise as skipping, running up stairs, dumb-bells, the "hundred up," and physical jerks generally as being of universal application to the athlete in training, whilst the practice of some definite running action either inside or outside ("limbering up" previous to a race) is of particular value.

Under this heading a word may be said of dancing, which, though in itself by no means a bad form of occasional if somewhat tiring exercise, is unfortunately so generally associated with both close, heavy, smoke-laden atmosphere and also lack of sleep that it can hardly be recommended in training.

(f) *Warmth*.—It will be found throughout succeeding chapters that time and time again we stress the very great value of maintenance of bodily warmth. This is simply because all physiological processes—and from the athlete's point of view particularly those of the muscular system—are stimulated to greater degrees of activity by this maintenance of an optimum body heat. In training and in competition it is equally necessary to ensure that one keeps warm. And even in one's daily life the taking of reasonable precautions against inclement weather and the wearing of suitable clothing, which in general should be light and airy to permit of the skin carrying out its normal functions. All these are points worthy of consideration by the man in training. During his actual track training every opportunity should be taken to absorb all the sunshine available, and a really warm sun should be the only excuse for loitering about during practice. In competition it must be remembered that one has to combat, as well as any actual existent cold, that subconscious sensation of chilliness which may often be so worrying. Rubbing, towelling and limbering up all have their uses in the production of a quicker circulation and a consequent increased heat production, whilst common sense will warn the athlete against standing about with the minimum of clothing on either in the dressing-rooms

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or on the track, and against being bare-footed on cold concrete floors.

(g) *Baths*.—A well-known trainer of recent years has called baths “God’s own remedy for all the after-effects of a race”—and we are inclined to agree with him. Baths—and cold baths unless there is some very good reason against them—apart from ensuring an ever-important cleanliness, serve as a means of increasing muscular tone and of improving circulation. A morning cold bath and a warm bath followed by a cold shower after actual exercise or competition are very good permanencies in the athlete’s daily routine. Actual swimming is not advocated, but a dip in the sea is most highly invigorating and advantageous, providing, of course, it is not taken on the day of a race.

(h) *Massage*.—Again we come to a subject over which rages a seemingly never-ending controversy. Massage, ruling out its use in cases of minor injuries, presumably finds its applicability in improving circulation and producing a so-called “looseness” of the muscles. That these ends can be attained by other methods, as, for instance, walking and exercise generally, by suitable baths, etc., has already been pointed out. And we feel inclined to think that massage is rather an over-rated process, except in certain definitely limited fields. At the very beginning of training it is probably of value, on a very cold day previous to competition it may be the most suitable way to achieve the desired end of maintaining body heat, but as a routine measure day after day, before and after exercise, it is to be deprecated, for whatever results it may produce can be obtained with so much more general advantage by the more natural means of actual running, baths and good towelling, whilst any psychological effect it may have becomes blunted by continued repetition. And if massage is resorted to, it should always be put into the hands of a skilled masseur, for bad methods may be definitely harmful and produce a slack, toneless condition of the body

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musculature, which is the very last thing the athlete wants. Massage must never be rough, but rather a very gentle, steady rubbing always in the direction of the heart, and with the muscles being massaged completely relaxed. The fallacy still seems to hold credence that the various embrocations and liniments used by masseurs are able to penetrate the skin and produce some definite medicinal effect, but the only real utility of these substances, as also of the powder frequently used, is to obviate any distressing results from the friction of massage, and, providing the rubbing is scientifically carried out, they are really of doubtful value except in rare cases of very tender skins, etc.

3. **Trainers.**—Since at some time in his athletic career practically every athlete comes to a greater or less extent under the influence of some trainer, whether amateur or professional, it is of interest to consider those qualities in a man which best fit him to fill this responsible post adequately. And when one thinks of it, the trainer's responsibility is no light one. He has not only to teach and develop athletic style and technique—which in itself necessitates both experience and a clear, quick-thinking brain—but he must study the welfare both of body and mind of his charges. The ideal trainer has many *rôles* to fill. He must be "guide, philosopher and friend," something of a doctor, much of a student of nature and a judge of character, and, above all, a man. He must inspire confidence in his teaching, and to do this it is necessary for his teaching to be backed by good, sound experience and knowledge and by the ability to impart this to those under his care.

So many coaches tend to adhere too closely to what they personally consider to be correct style, to have their own particular little fads and fancies, to consider themselves infallible. These tendencies must always be strongly opposed. The trainer with the greatest success is the man who is broad-minded and possessed of a goodly supply of common sense. He must learn to

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develop the power of appreciation of the individual, both his ability and his character, and of developing these along the peculiar lines most suitable to that individual. It is certainly something to be able to take in hand a born athlete and make of him a champion, but it is a far greater gift to be capable of appreciating the latent possibilities of absolutely raw material, or of making a first-class man from someone who was previously just average.

The trainer must have system and method, and he must show initiative, but he should at all costs avoid being needlessly dogmatic. This does not mean that he should show weakness. Trust and confidence will never ensue if a trainer lacks sufficient self-assurance. But the wise man can advise, teach and correct without ever actually ordering, and this is the ideal attitude for the trainer to adopt. His charges should be able to come to him freely and openly with all their difficulties, and he must equip himself to be able to solve them satisfactorily. In other words, he must be able to teach theory as well as practice. It is a great thing to have knowledge, but it is a far greater thing to be able to impart that knowledge lucidly and confidently.

Kindness, without any forfeiture of discipline, and appreciation of the human element in one's charges, the ability to put oneself in their places, are essential attributes in the good trainer. He must always remember that more is often done by leading than by driving, that to be too exacting, too dogmatic, and too strict will, in the long run, simply defeat his own ends.

Cheeriness, optimism and enthusiasm, and the ability to develop this atmosphere around him, he must also possess, and this without any forced bravado or noise. Cool, quiet confidence, as much personal attention to the individual as he can possibly give, tact and understanding, these combined with knowledge and experience will produce a trainer worthy of his high responsibility. Age is not a necessity by any means, but very

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often the rather older man makes the better trainer, for the simple reason that he has been "through the mill" himself and is the better able to appreciate what is required of the ideal trainer.

4. Medical Considerations.—Athletics and athletic training from a medical point of view, involving as they do all the physiological processes of the human body and the degree of reaction of these to increased effort, form a subject sufficiently extensive for a separate book. Hence it is intended here to take only a very cursory survey of some of the more interesting and applicable aspects of the subject.

The athlete and his doings have attracted a considerable amount of attention of late years from doctors and physiologists, and for those who are interested in the more intricate problems involved, the instructive and fascinating researches of Professor A. V. Hill should be consulted.

In the first place, one cannot stress too strongly the advisability of a thorough medical examination previous to taking up seriously the sport of athletics. And, subsequently, occasional visits to one's doctor are often well worth while if only to get a clean bill or to be told how much good the exercise is doing one. Medical examination is of particular importance in the case of the school-boy, and should never be postponed until the eve of sports day, for by then it is possible that irreparable harm may have been done.

Whilst on the subject of boys—a subject more fully dealt with in a later chapter—one may just say that training in any strict or limited sense of the word is really quite unnecessary. The boy is naturally fit, and the life of the average boy tends to keep him fit automatically. The essence of his training should be embodied in the word "moderation." Excessive effort in youth militates against sound physical development, and what the boy at school should aim at in his training is the acquisition of style and technique rather than the

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cultivation of powers of endurance and stamina. This combined with sound teaching in the rudiments of the health and care of the body are all that a boy's training demands.

Whilst on the question of age, one may consider the often asked questions as to when active participation in athletics is advisable and when an athlete must consider himself too old for the game. Naturally, no hard-and-fast rules apply here. With reference to what has been said above, one can hardly advocate strenuous athletics before the age of nineteen or twenty, but the other end of the scale is much more difficult to place. As the natural elasticity of the muscular tissues, which is an integral part of youth's heritage, tends to decrease as the 'thirties are approached, there is consequently a falling-off in the amount of speed the muscles can produce, but nevertheless at the same time there is occurring a gradual increase of strength and powers of endurance. Hence the explanation, assuming always that the individual maintains good general condition, of the tendency to run gradually longer and longer distances as age increases. There is really no physical reason why a man should not be able to run a good mile at the age of 35, and some do, but for the majority of athletes extraneous conditions make it impossible for them to carry on as long as this. The apex of an athlete's life is probably reached somewhere between the ages of 22 and 28.

The action of muscle, which is, after all, the physiological basis of the act of running, is essentially a process of contraction in response to a nervous stimulus, the energy required for this process being derived from the oxygen carried by the blood stream. Hence, in one sentence we meet the four great systems chiefly concerned with running—the muscular, the nervous, the vascular or circulatory, and the respiratory.

Others—in fact all the others, *e.g.* digestive, endocrine, excretory—are more or less indirectly concerned, but it is on the above four that the brunt of the work falls.

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And in this act, as in a greater or less degree in every act performed by the human body, the crux of the situation lies in the efficiency of the co-ordination between these various systems. For the more perfect the co-ordination, the more simplified and rhythmical become the actions involved in any particular process, and correspondingly the greater the economy of energy in proportion to the degree of elimination of unnecessary effort.

This is simply the old theory of mind and body working in perfect concert put in another way. The nervous system is, of course, the primary mover. Some stimulus appreciated by our special senses, *e.g.* the hearing of a starting gun, is conveyed to the brain and there translated into the idea of the necessity of movement. This impulse is relayed along suitable nervous paths and ultimately reaches a group of muscle fibres, where, as it were, it fires the train, leading finally to the contraction of that muscle. One of the essentials of training is by constant practice so to adapt the nervous system that it replies more readily and rapidly to these stimuli, and at the same time from constant use finds a definite optimum route for the impulse to travel with the maximum speed to the muscle.

With muscles themselves athletes are naturally endowed to a varying degree. The sprinter, on the whole, tends to have bigger muscle fibres than his long-distance brother, and to this fact, together with a rather more highly strung nervous system, has been attributed the radical difference between sprinter and stayer. But whatever the initial amount of muscle owned by any one individual, training relatively increases this, for the simple reason that during a normal non-active existence we possess many muscle fibres which we do not need to use. When, however, as in running, an increased and exceptional effort is demanded, then these fibres, which habitually are a reserve, come into action and develop *pari passu* with their more commonly used fellows. This is one of the results of training. Furthermore, these

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muscles in activity require a correspondingly greater amount of blood supplied to them both to increase the oxygen available and to remove the excessive waste products. The chief of these latter is lactic acid, and it is this substance which is responsible for the feeling known as fatigue. Again Nature comes to the assistance of the athlete in training and those centres in the brain which direct the supply of blood more to one part of the body than another—the vaso-motor centres—learn to concentrate on the muscular system, whilst at the same time the heart develops a relatively more rapid and forceful action. Further than this, locally at the site of muscular contraction, Nature has made provision for any extra demands upon her resources, for exactly as there are muscular fibres which are not ordinarily in use, so are there also minute blood channels—capillaries—which are usually closed and functionless, but which in the stress and strain of active effort are opened up to cope with the greater supply of blood pumped to the muscles by the heart. Training thus increases the available supply of blood, and consequently oxygen, to the muscles to a maximum. To what a considerable degree this is necessary will be recognised from the fact that sprinting 100 yards requires almost thirty times as much oxygen as would be used in an equivalent time under normal conditions, and this, as is often the case, must be done without a breath being taken during the race!

But training does even more than this, for however fit one is, it is impossible not to get fatigued sooner or later in a race of any length, and hence the muscles must be accustomed to carry on in a medium of lactic acid as it were, and it has been suggested that those in really good training have actually developed the power of producing some specific antibody in the muscle to neutralise temporarily the bad effects of the lactic acid.

Professor A. V. Hill has stated that the most economical results are obtained when a race is run at practically the same pace throughout, and this is probably substanti-

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ated in practice in running the longer distances, and perhaps one can imagine how a stable equilibrium is being set up between the waste products of the process of muscular contraction and their specific antibody.

Two further facts in regard to our blood are worthy of note. One is an interesting observation of Dr. A. Abrahams that since it is estimated that all our red blood corpuscles are renewed every two months, this period of time is the minimum for a successful course of training. The other brings in another aspect of training, namely diet, for there are certain foods, *e.g.* fruit and vegetables, whose salt content tends to raise the alkalinity of the blood to an extent when it is capable of carrying relatively more oxygen. And the more oxygen we can carry per cubic millimetre of blood, the better will our "wind" be. For "wind" is only indirectly an affair of the respiratory system. Loss of wind really means that the heart has temporarily found itself incapable of keeping pace with the demands of the muscles. But the heart *can* be trained to keep up, for in normal health the heart never tires, and unless there has been some previous defect no amount of exertion, however great, can really "strain" it. But, on the other hand, if sudden excessive strain is put on the heart of an untrained person, it is quite possible to dilate it, and hence, perhaps, lay the foundations for future degeneration of the heart muscle.

Of the respiratory system, we have already treated to some extent in an earlier part of this chapter. Since it is responsible for the supply of oxygen being brought into contact with the blood stream in the lungs, its importance need not be stressed except to point out that those who are supposed to have "weak lungs" often derive an immense benefit from a graduated course of training. Fresh air, and plenty of it, has never yet done anyone any harm.

One must perforce pass rapidly over the other systems of the body. Digestion has been dealt with under the

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heading of diet, and here one need but add the caution against allowing nervousness and excitement to upset that important process, as, unfortunately, it can most certainly do. Care of the bowels—regularity being an essential—of the teeth, particularly, and the tonsils, those ever-open portals of potential sepsis, of the skin, which with the kidneys are responsible for the excretion of so much of the waste products of the body's metabolic processes, are all of vital importance to the athlete in training. One cannot overstress the value of periodical and regular visits to the dentist.

One other system, however, demands especial mention—the endocrine system, comprised of those highly intriguing glands of internal secretion the functions of which, all very closely inter-related, are still very largely unknown ground. But we do know enough of them to realise that they play a very big part in the body's vital processes, and one presumes that in training their functions become suitably attuned to the greater requirements of the human body. Perhaps two brief examples may serve to demonstrate this. The thyroid gland, by its secretion, is responsible for a general speeding up of the bodily functions—in particular, perhaps, that of the heart and circulation, and from considerations mentioned above it will be easily recognised how important this increased activity of the vascular system is to the athlete in competition. Again, the suprarenal gland secretes a substance which, amongst other actions, serves to stimulate the so-called “sympathetic” nervous system and produce a raised blood pressure. As nervousness, fear and allied sensations are said to be amongst the most potent stimuli to this gland, it can be seen that at the beginning of a race, for instance, it must be very much in the picture.

A word is, perhaps, necessary in regard to drugs. Drugging, as implying the use of strychnine, cocaine, etc., is most definitely and absolutely to be deprecated. Apart altogether from the considerations of possible

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disqualification and not playing the game, the idea is medically unsound. For the healthy body requires no stimuli outside its natural ones to produce the maximum possible effort. And to a very large extent much the same can be said of medicines. Apart, of course, from such things as aperients, and liniments for the rubbing of sprains, etc., they should be quite unnecessary. The many tonics one sees on the market have no applicability to the athlete in training except under exceptional conditions.

Amongst these latter the most important from the training viewpoint is the phenomenon of "staleness." Exactly what staleness is, it is difficult to say, but that it exists as a separate entity there is no doubt whatever. It has been thought to be a species of auto-intoxication; it has been credited to continued, arduous competition; it has been pointed out as the result of faulty training methods, in particular lack of sufficient fluids, but one is inclined to the view that it is essentially a condition which is primarily mental, due to lack of variety in training and to a habit of excessive introspection, and only secondarily physical. It is, however, in this form that it chiefly shows itself. The athlete loses weight (always a bad sign once the normal healthy level is reached), he ceases to perspire to any extent after exercise (showing a derangement of his vaso-motor system), his eyes are dull and his complexion poor, he is listless, depressed and irritable, he cannot sleep well, and his appetite goes. Surely a very sad picture indeed for a man who is supposed to be in first-class physical and mental condition, though, of course, a man would have to be very stale indeed to exhibit all these symptoms at one and the same time.

To overcome this evil it is vital that he should cease all athletic work temporarily and, if possible, go right away and have a good holiday. He should drink as much as he can, including a little alcohol, and a tonic will probably be found useful. Above all, he should have

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with him a congenial companion who has been told or knows that his friend needs ample diversion and just as little mention of athletics as is humanly possible!

In conclusion, just a few words in regard to the commoner injuries and ailments of the track athlete. Any sport lays its follower open to potential injury, and though this is less the case with athletics than many other games, the athlete may, nevertheless, occasionally find himself in trouble.

His feet need particularly careful attention, and cleanliness always is essential! Corns, if painful, are best treated with either 10 per cent. salicylic acid or with resorcin ointment. Ingrowing toe-nails can be treated in the early stages with iodine and by being carefully cut, but if they continue to give trouble should be taken to a doctor without delay. Blisters should be pricked—away from the bleb—after a preliminary painting with iodine, and can be suitably protected by a corn-plaster.

Sprains or “pulled tendons” which actually are really always muscles involve primarily a ruptured blood-vessel and secondarily a ruptured bundle of muscle fibres. The underlying cause is thought to be a condition of mild toxæmia, resulting in an imperfectly nurtured muscle. A strained muscle must always be immobilised and rested, and as soon as possible massaged. In other words, the treatment is exactly that of a fractured bone.

Abrasions (especially “spiking”) must always be very carefully treated and sepsis avoided at all costs. Iodine immediately and covering with aseptic dressings is the best line of treatment, combined if possible with an injection of anti-tetanic serum.

Stiffness may be due in the earlier stages of training to accumulation of lactic acid in the tissues, when all that is needed is more training, or later to a slight rupture of muscular fibres, when treatment involves hot baths, massage, and gradually increasing light exercise.

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Stitch has been attributed to many causes, amongst which are indigestion from a meal too close to a race, jarring, giving a form of diaphragmatic cramp, and an engorgement of the spleen and liver. Apart from ceasing to run there is no cure once it has arrived.

Bruises are best treated with cold applications (e.g. lead lotion) and a firm bandage, or, if very painful, by fomentation in the early stages.

Shin soreness is usually due to running too fast too soon, *i.e.* before sufficient training has been done. Rest is the best cure, and if the affliction recurs, a blister as a counter-irritant over the tender spot will often work miracles.

Cramp is only a temporary affliction cured by forcibly straightening the afflicted muscle, if necessary, after a preliminary kneading.

Constipation and colds must always be carefully guarded against, and in this, as in all cases, a doctor consulted if any ailment or injury gives any signs of being really serious.

Section 2.—Tracks and Impedimenta

1. **Tracks.**—The word “Track” may be said to cover everything from the bumpy country school field marked out with a roughly circular white line to the gigantic super-stadia of various European cities, especially where Olympiads have been staged, and of the United States of America. It is not intended, however, to discourse on the history of tracks, nor on their many varieties, but with simply a mention of the old grass tracks, many of which still exist and are still used in this country, to pass to a brief consideration of the average cinder track of to-day.

Before such a track is laid out the first essential is to have a careful plan, including all details of arrangement of the available space and of stands, dressing-room

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accommodation, offices, etc., drawn up by a competent draughtsman.

The best shape of track is probably the flattened oval, *i.e.* two "straights" on either side of the ground as long as it is possible to make them without producing too marked a curvature in the two semi-circular bends which join them together at each end of the ground. The optimum length of this oval is probably a quarter of a mile, as this distance forms such a simple denominator of longer distance races, besides allowing of the finish of any race up to 440 yards and the start and finish of all standard races of a quarter-mile and upwards taking place in the middle of one straight, thus serving the dual purpose of giving those in the best stand seats opposite this point the best view of these happenings, and, more important from the athletes' point of view, ensuring a certain amount of straight running after a start before the first curve is reached, and thereby lessening the possibility of unavoidable jostling and bumping which can so easily occur on the corners.

The track itself, which, as will be described shortly, consists essentially of cinders, should be anything from 20—25 feet wide, and some experts consider that the corners should, if possible, be banked to the extent of about 16 inches as a maximum for the outside of a track 24 feet wide. If at all possible it is a great asset to any ground to have one side of the oval extended lengthwise to give a long straight of about 250 yards, thus allowing all races of up to 220 yards to be run without a bend. Failing this, *i.e.* assuming the 220 yards to be run round half the circumference of the oval, an entirely separate straight cinder track should be placed inside the grass margin of the track and as nearly 150 yards long as is feasible, thus permitting the 100 and 120 yards races to be run straight. In these races each competitor has his separate lane, marked out by white chalk lines and not less than 4 feet in width. Similar lanes are, of course, necessary for any distance run on the track proper

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up to and including a quarter of a mile. These should be the same width, *i.e.* not less than 4 feet, and must be marked out *en échelon*.

With regard to the arrangement of the turfed area included inside the track, this will of necessity vary with the conformation of the ground itself, and with the particular ideas of those who originally plan the ground.

A good basis on which to work (*vide* Fig. 1) is to place the high jump and pole vault pits at either end of the

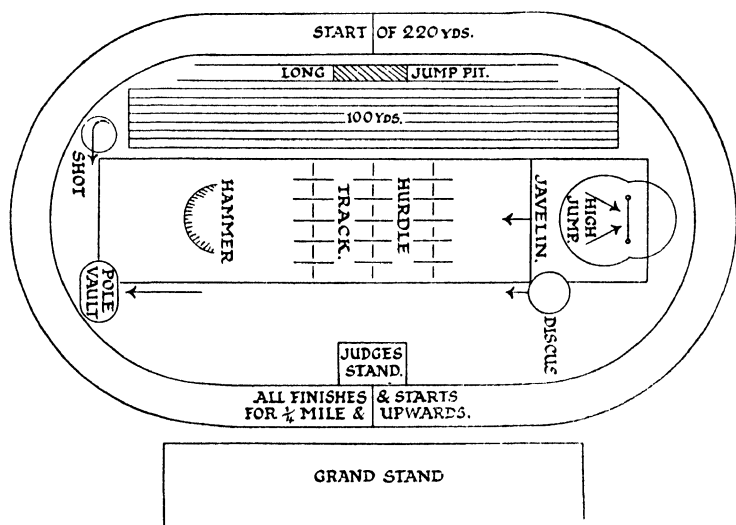


FIG. 1.

ground (*i.e.* in the curve of the bends); the long jump and hop, step and jump pits and run-ups parallel to that straight which is opposite the main stand, thus leaving the centre of the ground free for the throwing events, hammer, javelin, etc. The take-off for the high jump should be from a levelled semicircle of cinders at least 12 feet in diameter, and the pit, consisting of sand or sawdust mixed with earth and dug loose to a depth of about 4 feet, another semicircle not less than 12 feet in diameter, with its centre under the middle of the crossbar.

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The long jump run-up should be a level cinder path about 4 feet broad and roughly 50 yards long, the take-off board is discussed elsewhere, and the pit should extend from about 15 to at least 25 feet from the board, the first 15 feet being level, but not dug out at all. A very useful scheme permitting due allowance being made for varying winds is to have either a pit with a 50-yard run-up approaching it from both ends or to have one run-up track with a pit at both ends. The pit should also have suitable marking boards affixed on either side of it, and consist of well-dug earth and sawdust, and, if possible, in competition, top-dressed with a fine mixture of sand and clay to assist exact judging. For the pole vault the run-up is again a level cinder path relatively a shade broader and somewhat shorter than for the long jump, the take-off box is described in the section on vaulting, and the landing pit should be of similar consistency to that of the high jump but bigger—quite 15 feet in diameter. The hop, step and jump simply requires a longer distance—some 35 feet—of levelled cinders between take-off board and pit, the arrangements being otherwise as for long jumping. The shot is put from a circle 7 feet in diameter, the front circumference of which consists of a whitewashed board 4 feet in length and 4 inches deep. The hammer is also thrown from a circle 7 feet in diameter, and must land within a 90 degrees sector from the centre of this circle. To ensure this, all of the circle apart from this open sector in front is usually ringed off by high (8 feet) netting, placed at a suitable distance from the circumference of the actual circle. For the discus throw the circle is 8 feet 2½ inches in diameter, whilst a similar sector arrangement is used. The javelin throwing competition simply requires a white marked straight line at least 12 feet long at right angles to the direction of the throw.

One other small, but nevertheless important, detail with regard to the interior arrangement of the ground should be mentioned, and this is the great value of

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providing at the finishing post a small marked-off enclosure for the exclusive use of referee, judges and timekeepers.

The scope of this book does not allow anything to be said of the details of stands and dressing-rooms, etc., except, perhaps, simply to stress the importance of the provision of these with the greatest degree of comfort and efficiency possible.

One point probably worthy of mention is the system adopted on many of the most up-to-date tracks to-day of providing a means of communication between track and dressing-room by underground tunnels leading beneath the track to the centre of the ground, thus preventing both the congestion too often noticeable around the over-ground approach to the track and also the incessant crossing of that track by competitors previous to and after competition.

Finally, a few words with regard to the track itself, its preparation, composition and care.

In the first place, the ground should be carefully measured out according to the pre-arranged plan, and, if necessary, levelled. It is as well where possible to have a ground just a shade higher in the middle than at the sides so as to ensure good drainage. Should this not be possible, ample provision for any excess of rain by the laying of drainage pipes should be made before any work is commenced on the track itself, and this again should be completed before any serious attention is turned to the turf in the centre of the ground.

In passing it should be noted that in measuring any track for any purpose the measurement is taken one foot from the inner edge or "pole."

The track as measured out should then be dug to an average depth of 2 feet—provided, of course, it is possible to afford and to get an unlimited supply of cinders—and the earth removed completely except for the little that may be used to effect necessary banking at the corners. The foundation of the track is then laid at this depth and

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consists of large coke clinkers, loosely applied and not rolled. An average depth of about 9 inches is required of these. On top are placed layers of gradually less and less coarse cinders, mixed with less and less clay. Approximately 6 inches of the coarser and 6 inches of finer cinders form an excellent track, particularly if topped off with brick dust, as was the case, for instance, in the Amsterdam Olympic Stadium. Once laid down, the track should be carefully rolled with a gradually heavier and heavier roller, being at the same time copiously watered and occasionally scraped and relevelled on the surface.

During the athletic season a track should be most carefully tended. Daily sweeping, rolling and watering (in hot weather) are essential. If the surface seems to be getting loose and does not bind well with this treatment, rock salt added to the water is most useful, but as this solution is ruinous to running shoes it should not be used more than absolutely necessary.

In the off-season the track should be left fallow for two to three months at least, and then subjected to a course of deep raking and rolling in order to get some of the deeper cinders to the surface again and rebind the whole thing.

[The indoor tracks of the U.S.A. consist of carefully laid and levelled wooden boards—these usually being the floors of suitably converted armouries or gymnasia. In view of the necessarily limited space these tracks are usually 6 laps to the mile.]

2. **Impedimenta.**—The paraphernalia requisite to the complete equipment of a good training and sports ground may be divided into those fixtures which form an essential part of the track itself and those which are rather the personal necessities of the competitors and officials in various events. Whichever group is concerned it is obviously highly important for the club or organising body responsible for the fittings on their ground to ensure that these are of standard pattern and conform

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to national and, if possible, international rules and regulations.

We feel that it is a matter of considerable regret that there still exist in this country at any rate certain small differences between these two standards of competition. It is somewhat farcical to think that meetings can be held under international rules and yet with material that conforms only to national regulations. The International Amateur Athletic Federation, which is the recognised governing body for the sport throughout the world, has laid down a very definite set of rules and regulations for all events which it is possible to include in an athletic programme, and one hopes, in view of the rapidly increasing number of both open and what may be called private or limited international meetings, that every national organisation will ere long have standardised its own code of rules and regulations on the above I.A.A.F. basis.

In the following cursory survey of the impedimenta of the track, however, A.A.A. Regulations are quoted.

Among the first-mentioned group of track fittings—perquisites of the ground itself—one places:—

Hurdles.—The general pattern of these is a rectangular frame supported by two wooden uprights, the bases of which must not be fixed to the ground in any way. This frame should be as light as is compatible with stability, for a hurdle that is the prey of every breeze is almost as bad as one that damages the runners. Hurdles must be at least 4 feet in width, while their height varies according to the distance being run. For the 120 yards race the height stipulated is 3 feet 6 inches; for the 220 yards, 2 feet 6 inches; and for the 300 and 440 yards, 3 feet. Many varieties of hurdles are in use, of which mention may be made of the "swing-top" pattern and of that type in which the top bar simply rests on the supports without having any attachment to them. But a light, well-balanced one-piece frame is

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probably the best hurdle of all. It has become the custom to run hurdle races with six men competing at the same time, and as each of these requires his own flight of ten hurdles (every hurdle race has these ten jumps simply spaced at various intervals) a good ground should possess at least seventy, allowing for damages and mishaps, of each class of hurdle.

Steeplechase hurdles, with one exception, are similar in type to the ordinary hurdle, and usually 3 feet high, this being the maximum height permitted by regulations. The exception is the "Water Jump," which alone really marks the differentiation between a hurdle race and a steeplechase. This jump consists of a fence of four hurdles abreast, dressed with brushwood, in front of which is a space filled with water, about 2 feet deep just under the hurdles, and gradually getting shallower until the track is again reached some 10 feet from the jump.

High Jump Standards.—There is no one particular style of upright laid down as being correct, the usual type being a wooden post some 8 or 9 feet in height, mounted on either a circular or cross-board base, and perforated from about 4 to 7 feet with holes $\frac{1}{2}$ inch apart into which fit the pegs on which the cross-bar rests. According to old regulations these pegs used to project in the direction of the landing pit, so that it was only possible to knock the bar off in this direction. Now, to counteract the prevalence of the "rolling" style of high jumping, the pegs are square, flat pieces of wood, $1\frac{1}{2}$ inches wide and projecting $2\frac{1}{2}$ inches towards the opposite upright. The cross-bar resting on these can, therefore, be knocked off in either direction. This cross-bar, which is made entirely of wood, must be of the same dimensions throughout its length, but may be either rectangular or circular, with squared ends to rest upon the pegs, and in both cases about 1 inch in diameter.

Pole Vault Standards.—These are similar in type to the above, except that, of course, the greater heights achieved by pole vaulters must be catered for by an

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extra height of upright, namely to about 14 feet. This may be done either by having one very long continuous upright, or, as is rather more common, having a telescopic arrangement of one upright inside another, thus making for ease of adjustment. Long forked sticks to replace the cross-bar are an essential for this event, in which even more than in the high jump, where it is also of importance, a reasonable stability combined with relative lightness and with ease of manipulation is what is to be aimed at.

Judging Stand.—This is a small portable stand, consisting of three seats, arranged in tiers one above the other and each about 4 feet wide. This apparatus greatly facilitates good judging and should never be omitted from the equipment of a track of any size.

Finishing Posts.—These are narrow wooden rods placed exactly opposite each other on either side of the track, and about 4 feet in height, between which the worsted, which usually constitutes the so-called finishing "tape," is stretched.

Score Boards.—In these days of "loud speakers" the score board has become less of a necessity, but it is still required on most grounds and should be fitted up with a series of numbers and facilities for hanging and displaying these. The revolving board, which can be turned to face every side of the ground in rotation, is a simple and very useful arrangement.

Amongst the second group of track impedimenta—the personal requisites of athletes and officials—one may mention (a) for the officials:—

Megaphones.—Again not so commonly used since the advent of the loud speaker. The best megaphone is that which combines lightness with sufficient volume to give good tone and resonance.

Measures.—As required for the various jumping and throwing events, and also, of course, for the measuring of any track on which a potential record has been set up.

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The steel tape measure which can be rolled up in a leather case is probably the most serviceable variety.

Watches.—These perquisites of timekeepers are instruments beyond the scope of this book to discuss in any detail, but it may be of interest to note that the I.A.A.F. has now passed a rule that all races up to and including 300 yards shall be timed in tenths of a second, but distances beyond this still in fifths.

Starting Gun.—Usually, of course, this is provided by the individual starter to suit his own particular requirements.

Judging Cards.—If a previously printed card with suitable blank spaces to be filled in by the judges for the particular event concerned be provided at the beginning of a meeting, the ultimate checking of results, etc., is greatly facilitated.

(b) Personal requisites of athletes :—

Batons.—These consist of bamboo or light wood and are to be not less than 1 foot in length and of an average diameter of 2 inches.

Shots.—These are, of course, often provided by the competitor himself, but the club must be prepared to cater for the man who does not possess his own. The shot is an iron or brass shell, spherical in shape, and filled with lead so that its total weight is 16 lbs.

Discus.—To quote A.A.A. Rules :—“ The discus shall be composed of a smooth metal rim, permanently attached to a wooden body, brass plates set flush into the sides of the wooden body, and in the exact centre of the discus a means for securing the correct weight. The brass plates shall be circular in form, having a diameter of not less than 2 inches nor more than $2\frac{1}{2}$ inches. Each part of the discus shall be a counterpart of the other side, and shall have no indentations, projecting points or sharp edges. The sides shall taper in a straight line from the beginning of the curve of the rim to a line a distance of 1 inch from the centre of the

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discus. The largest dimensions shall be a circle not less than $8\frac{5}{8}$ inches in diameter. The thickness through the exact centre on a line perpendicular to the diameter shall be not less than $1\frac{3}{4}$ inches. The thickness at an inch from the centre shall be exactly the same as at the centre. The thickness of the rim at a distance of $\frac{1}{4}$ inch from the edge shall be not less than a inch. The edge shall be rounded in a true circle. The weight of the discus shall be not less than 4 lbs. 6.4 ounces, complete as thrown. A metal discus, complying with the official measurements, conditions and weight, may be used." Surely a most awe-inspiring weapon!

Javelin.—This consists of wood, is at least 12 feet in length, weighs at least 1.6 lbs., and has a sharp point of either iron or steel. The centre of gravity of the javelin is approximately 3 feet from this point, and at the centre of gravity there is allowed a binding of whipcord $6\frac{1}{4}$ inches long and less than 1 inch thick.

Poles.—Poles are either made of wood or of bamboo—now practically always the latter for reasons pointed out in a later section. They may be of any length or diameter, but these dimensions average about 15 feet and 3 inches respectively. The pole ends either in a metal spike or a wooden peg, and regulations allow it to be bound with a uniform thickness of adhesive tape which assists both to preserve the pole and to aid the grip of the jumper.

Hammers.—The "hammer" consists of a lead or brass spherical shell filled with lead in a similar manner to the shot, and, like it, 16 lbs. in weight. This is connected by means of a swivel to the "handle," which with the grip must be not more than 4 feet in length. This handle consists of a single unbroken, straight length of spring steel wire not less than $\frac{1}{8}$ inch in diameter. The grip, which must be rigid, may be of either single or double construction, but must be attached direct to the handle by a loop of the wire only, *i.e.* without the intervention of any swivel or other joint.

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Section 3.—Personal Equipment

The athlete's own personal equipment is relatively both inexpensive and simple in comparison with that required by many other sports. It is, perhaps, this very simplicity which leads to the unfortunately far too frequent lack of attention to both composition and condition of the few real requisites. A satisfactory outfit should provide essentially three things—comfort, warmth and service.

The value of the first is obvious, for it is frankly impossible for an athlete to produce of his very best if there is any factor in his equipment which makes him conscious of its existence. It is astonishing what a mountain competition and the nervous strain connected therewith can make out of such a molehill as a tight vest, a knotted shoe-lace, or a loose spike. To ensure warmth, too, is almost a more vital necessity than to have really comfortable running kit—though the warmth factor is more closely related to the equipment of the training track and the preliminaries of competition than to actual competition itself.

As the finer chances of success are, however, so closely related to the previous preservation of a sufficient body temperature, one can really consider this condition with regard to equipment as a whole. It cannot be too forcibly stressed—and will doubtless be reiterated again and again in succeeding sections of this book—that warmth during training, warmth immediately prior to competition, and the maintenance of warmth after, or in the field events during competition, are of primary concern to every athlete. Practically every essential physiological activity connected with the practice of athletics is retarded by cold, whilst, even in hot weather, the nervousness inevitably associated with competition to some degree produces a feeling of chilliness—even though one may be actually perspiring at the time—which has to be guarded against just as carefully as

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actual low temperature. So the athlete's "over-clothes" must be warm! And this means that they must not only be reasonably thick, but also reasonably loose. So often one comes across the mistaken idea that the tight-fitting sweater is the warmer sweater. This is definitely not so, for a close-fitting garment simply acts as a medium through which body heat can be easily and quickly dispersed into the surrounding atmosphere, whilst if loose it acts as a form of protective barrier, preventing the escape of the layer of warm air next to the skin which the body has produced.

And our third essential for good equipment is service. By this is implied that it pays in the long run to buy a good thing at first, for the length of available wear and the avoidance of repeated inferior purchases, apart from the fact that cheap goods never fit properly, will more than adequately repay any initial outlay. As a corollary to this, if one does invest in good material, that material is worth looking after well, and attention to and care and cleanliness of one's gear are points that no good athlete will neglect. Apart from thereby prolonging the useful life of any particular article, they subconsciously tend to stimulate one's self-respect and self-confidence and to negative any tendency to slackness either in one's physical training or mental outlook towards the sport.

The simplicity of the total requisite equipment is probably quite an important factor in accounting for the general appeal athletics has to the average man. It is quite possible to fit oneself out with all the essentials of athletic competition for a sum of not much over two pounds, whilst the initial expenditure of five pounds would ensure a very comprehensive equipment of excellent quality.

Proceeding to a brief consideration of the various articles which should constitute this equipment, one may first deal with the most important of all, namely shoes.

Shoes.—For all races nowadays, apart from cross-

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country, Marathon and road races, the spiked shoe is worn. This should be made of leather which combines the maximum of softness with the minimum of stretching, and should fit the foot so tightly and exactly, having especially a good grip at the heel, that the assistance of a shoe-horn is required to get it on. To ensure the highest degree of satisfaction in the fit of a shoe, it should, if possible, be made to measure. This should at any rate apply to the shoes actually used for racing, and in this connection it may be mentioned that it well repays the athlete to set one pair of shoes aside for competition only, whilst using one or more older and inferior pairs for training purposes. A spare pair of shoes should, however, always be carried on competition days.

With regard to the "spikes" or steel points which are firmly fixed into the sole of the shoe, the number, length and arrangement of these may vary considerably according to the weight of the athlete and his particular style, especially in respect of length of stride, whilst the event in which he is competing, of course, plays a large part in deciding the choice, and also the nature and condition of the track on which he is running. The number varies from four to seven (exclusive of the two heel spikes which are required in the shoes of all hurdles and field-event men). The four-spike shoe, arranged two and two on a short sole, is essentially that of the sprinter with a springy action, who is right up on the ball of his foot all the time. The five-spike with a single front spike is simply a variety of this, whilst the six and seven-spike, set in a necessarily longer and rather stouter sole, is for those who tend to run more on the flat of the foot—the long-striding sprinter, the middle and the long-distance man. The length of spike varies from about $\frac{1}{2}$ inch in shoes for a hard, fast, dry track to $\frac{7}{8}$ inch for use on wet, soft or loose tracks, or on grass. Generally speaking, on an average track, the short-distance man needs a spike about $\frac{3}{4}$ inch long, and the

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long-distance man one rather nearer $\frac{1}{2}$ inch. In passing, it is of interest to note that spiked shoes were first introduced into America in 1868, whilst English athletes were apparently somewhat earlier in adopting this style of shoe.

For the jumpers in particular, it has been found that a small rubber pad in the heel of the shoe is a very great boon in preventing to some extent the jarring and consequent soreness unavoidable in these events. It is noteworthy that the great Paavo Nurmi, who runs with a peculiarly flat-footed action, has complete rubber heels to all his shoes.

A device of considerable value, especially for sprinters, is a broad (3 inch) elastic band sewn into the shoe, fitting closely over the instep. It gives a feeling of support and security which is most comforting in fast work. Hurdlers, again, frequently use a shoe which has an additional light leather ankle strap, for similar purposes. Shoes being such an important part of one's outfit, it is very necessary to pay particular attention to them; to avoid leaving them in a wet condition; to oil them carefully after competition on a bad day; to keep them scrupulously clean, especially the spikes; and to avoid walking on them on any hard surface, especially cement, which very quickly both bends and blunts them.

Among other forms of shoe which need brief mention is that for cross-country work, which is a more loosely fitting shoe with a sole either of rubber, especially *crêpe* rubber, or of thin leather. The drawback to the former is that in wet weather it becomes very slippery. This can to some extent be counteracted by having a solid rubber sole raised into several small ridges running across the sole, and in any case all cross-country shoes should be black-leaded in wet weather to prevent for as long as possible their being soaked with water.

Indoor athletics demands a shoe which is the same as the ordinary type, except that the spikes are cut off very short ($\frac{1}{4}$ inch) and blunt.

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One other type of shoe should be included in the athlete's outfit, but this pair will not increase his outlay, for it is simply an ordinary pair of shoes (or slippers) which he can wear in getting from the dressing-room to the track and back, and before, between and after competitions, thus serving the double purpose of both saving his racing shoes and allowing his feet the maximum of comfort

Clothes.—Under this heading the two essentials for actual competition are the *vest* and the *shorts*. For them it may be said the material is immaterial. What really matters is that they should fit comfortably and not too tightly, be they of silk, which, though admittedly most pleasant, is rather in the nature of a luxury, or of cotton, which is quite sufficient for any ordinary purpose. Again, it seems to us of little consequence whether the vest is of the "pull-over" type or whether it buttons up the front. It is a case of *chacun à son goût*. With the shorts, of course, the "button" type is the better for obvious reasons. In England, unlike anywhere else in the world, the A.A.A. Laws insist upon a half-sleeve for the vest, and though this seems an unnecessary restriction, it is rather a moot point as to whether freedom under the arms makes any difference at all in competition, except, perhaps, in the case of the throwing events. The "shorts" should not be too abbreviated, but they should most certainly live up to their name, and should also be comfortably free and wide, and, if being used for a steeplechase, dark in colour. The elastic waistband seems, at the present day, to have been rather superseded as a means of support by the adjustable buckles over either hip. If possible, in case of accident, and as an antidote to the effects of rain, two vests and two pairs of shorts should be included in the day's equipment.

Just as essential, though not for actual competition, are the *sweater* and the *track pants*. The former should be of good wool and loosely fitting. The ideal type of "track pants" is the thick woollen variety reaching

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right down on to the foot and fitted with the very useful "slip fasteners," but any substitute for these, *e.g.* an old pair of flannel trousers, is better than running the risk of going about in anything but the warmest weather with bare legs.

Toe socks of wash-leather, and *socks* proper, the latter especially for cross-country runners, are not absolutely essential, providing the athlete possesses comfortable, well-fitting shoes, but are recommended, and in particular cases they may be of distinct advantage, providing always that due precautions—*e.g.* smearing the inside of the sock with soap or tallow—are taken against the rubbing to which the long-distance wearer of socks is so prone.

As an alternative to the sweater some athletes prefer the *blazer* and *scarf* combination, which, though perhaps not quite so useful from the warmth point of view, is certainly more picturesque, whilst, of course, it must be remembered that even amongst great athletes superstition still exists, and a blazer is often an old friend which it would be inviting disaster to discard!

The long woollen *overcoats* used by the British Olympic team in Paris in 1924 are luxuries rather beyond the reach and probably also the requirements of the athlete; but if one must compete in rain, or if rain seems imminent during competition, a light overcoat is a necessity and not to be discarded until the last possible moment, whilst on any occasion it forms a good rug, either to sit upon previous to a race or in which to keep warm. The possibility of any form of covering for the head being necessary in this country is remote, but in warmer climates a *hat* may be a very necessary adjunct.

Various: Shoe-laces.—It is highly important that these should be carefully examined at short, regular intervals, and always before going to the sports ground on the day of an important event; and that a spare pair should be carried at every competition.

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"Slips."—A.A.A. Rules stipulate that these must be worn by every athlete, and though by far the majority do, for reasons of comfort and convenience, and also largely because it has become a habit, one does not imagine that should a breach of this ruling suit the peculiarities of any particular athlete it would be likely to meet with any dire penalty.

"Corks."—The use of running-corks—thick, spindle-shaped pieces of cork about 4 inches long and 1 inch thick, hollowed out to allow the passage of a rubber band which, when slipped over the back of the hand, holds them firmly in the palms—is very much a matter for the individual, but we certainly have found them of great use in races of up to a quarter of a mile, especially when these have involved a fighting finish. In field events, however, they are illegal.

Tape Measure.—The long-jumper and the sprinter, though in the latter case a suitable knotted piece of string will do equally well, will save themselves much time and trouble by carrying their own tape measure.

Trowel.—A trowel, especially the flat, mason's trowel, should be an essential part of the outfit of every man who uses the "crouch start," and, of course, in particular every sprinter, in whose case well-made "holes" are all-important to the success of his race.

Toothbrush, etc. (*i.e.* soap, towel, brush and comb, scissors, safety pins, and small medicine chest, with iodine, zinc ointment, a small bandage, some wool, gauze or lint, and adhesive plaster as a minimum). Cleaning the teeth and rinsing out the mouth with cold water are very valuable preliminaries to any important contest, whilst the other details mentioned tend to the production of that comfort and consequent efficiency so vital to an athlete on the day of competition.

Of further possible articles required in an athlete's equipment there only remain now the particular implements of the field event in which he desires to compete, such as shot, hammer, discus, javelin and pole. Though,

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of course, any properly equipped ground provides these as required, many field-event experts prefer to have their own, and in most competitions are allowed to use them providing they fulfil the necessary requirements of A.A.A. Rules.

CHAPTER VI

SPRINTING

Section I.—Introduction

TO move as rapidly as one could, were it in the chase or in the flight, was probably the earliest recognised conception of running. And this, the longest possible output of maximum energy, is really the essence of what we now know as sprinting. As a term "sprinting" is somewhat of an anomaly, since one is naturally inclined to define it as running at top speed. The researches of various investigators have, however, proved conclusively that full speed can only be maintained by the human body for a maximum of about 20 yards, and that it cannot be attained—*i.e.* the inertia of the body at rest cannot be overcome—until some 60 yards have been covered, and that after running approximately 80 yards in all, momentum is gradually but inevitably lost. This being the case, "full-speed" running will hardly adequately fill the bill as a definition of sprinting, a term under which we propose to consider the running of all distances up to and including 300 yards. Hence one must perforce revert to the earlier and wider definition of running as fast as is possible for as far as is possible.

The universal appeal and popularity of sprinting applies alike to athlete and spectator. There is no small thrill in running a sprint race and there is almost a greater one in watching it. Even before the present-day craze for speed became so general, it is hard to imagine one's blood not being stirred by running or by watching a 100 yards race, when one realises that this distance traversed in 10 seconds means the propulsion of the

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human body at an average of more than 20 miles per hour. Actually in the middle of an "even-time" hundred, when the sprinter is covering some 35 feet per second, he is travelling at a speed of almost 24 miles an hour! So great is the appreciation of fast running to-day that one may safely say that to have an even-time reputation is to be a marked man for life. And there is certainly no race in present-day athletics, with the single exception, perhaps, of a good short hurdle race, which raises the enthusiasm of a crowd of spectators to such a pitch as does the 100 yards sprint. It is 10 seconds of the most concentrated excitement.

Again, to the average man who takes up athletics as a sport the appeal is very great, for, though later he will find out what a fallacy this is, it appears—especially in the hands of the expert—a comparatively easy business; and it is evident that even should he be unsuccessful his deficiencies will be relatively less obvious than would be the case over a longer distance. One has but to consult the entry list for the sprint handicap in any big open meeting to realise that by far the majority of athletes are short-distance men of some sort. So great, therefore, is this universal appeal that we feel the sprints fully merit primary consideration amongst the various individual events of the athletic programme which it is proposed to discuss in succeeding chapters. Far from being simple, sprinting is in point of fact easily the most difficult of the running events, and amazing as it may seem the actual strain involved is relatively greater than in any other race. The facts mentioned above in connection with the limit of full-speed running show that even in a 100 yards the athlete's effort is actually failing to some extent by the time the last 10 or 15 yards are reached. It is therefore unnecessary to stress further the enormous importance of the sprinter being just as physically and mentally fit as is possible if he hopes to achieve great things. An exceedingly high degree of muscular and nervous co-ordination is demanded, and this can only be obtained

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by a long, conscientious period of steady training on a basis of sound natural ability and scientific principles.

The successful sprinter is really something of a paradox in that he must be both natural and artificial. He must be possessed of a certain amount of innate ability in the first place, but to achieve anything more than mediocrity he must graft on to this basis a mechanical stereotyped style productive of such perfect, apparently effortless, rhythm in running that he becomes to all intents and purposes an automaton. The first-class sprinter has made sprinting a habit.

It will be readily understood that this process is not such as can be carried out in a few days. It needs months and even years of continued, painstaking practice, with meticulous attention to every minute detail and much concentration and perseverance to accomplish the desired end. But in sprinting the game is always well worth the candle, for each little detail brought by practice from the condition of being a definite conscious effort to that in which it becomes part of the sprinting habit shows itself in increased speed, improved style, greater confidence and more success. So automatic should sprinting become that it has by some been classed as a pseudo-field event. In other words, the sprinter should aim not so much at beating his opponents as recording a better time than they do. It is inevitable, of course, that the element of competition should in some degree, however small, enter into the consideration of any race, but in sprinting the race should be run as much an individual mechanical action as possible with the minimum of recognition of the presence of opponents. The ideal, as H. M. Abrahams says, would be for sprinters to run in blinkers!

There is really no such thing as the sprinting type. All men can be sprinters given a certain amount of ability and the chance to acquire a suitable technique. Big men and small men, tall men and short men, light men and heavy men—all have had their representatives

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amongst the world's crack sprinters. Nevertheless, there do seem to be certain attributes which pertain to them all, both physical and, more particularly, mental. The sprinter, whatever may be his bodily proportions, always seems to possess a goodly store of nervous energy. He is the alert, brisk type of man, quick in his response to external stimuli either mental or physical. In fact he is probably at rock bottom of an excitable nature ; whether this becomes evident or not depends on the particular individual concerned and his powers of self-control and restraint. The sprinter is essentially temperamental, and the effect this side of him has upon his running is enormous—and very often one of the greatest responsibilities either he or his trainer or both have to shoulder. His whole attitude when trained and fit should be indicative of compressed energy—he should appear to be, as it were, straining at the leash. It is the buoyant, exuberant, self-confident feeling which arises from this sort of nature that spells the last word of success for a sprinter. However great his ability, however perfect his style, he must back these up with that keen, eager, “ on-the-toes ” sensation which implies a firm belief in his own power to succeed before he will actually reach the front rank. Physically, irrespective of actual size, the points which seem to mark out the sprinter are the possession of big, strong leg muscles, relatively long thighs (*i.e.* from hip to knee), well-developed chest and shoulder muscles, a high instep and a neat ankle and foot. One does not intend to convey that every first-class sprinter possesses all these attributes, but anyone who has achieved much success at short-distance running will be found to conform in most respects to the above picture. Many authorities state that taken all round the sprinter tends to be on the small side and that the success of such a one is dependent upon his relatively greater rapidity of action. We venture to disagree with both these statements, and, whilst holding no particular brief for the big sprinter,

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it must be remembered that there is such a thing as being too rapid in action, where energy is simply wasted without the production of proportionate speed. And, again, in quite recent times one can think of a considerable number of sprinters who have obtained world's championship honours and been comparatively big men. However, the question is of small interest, and one in which comparisons are invidious and generalisations really useless.

We have included in our definition of sprinting all those distances which can be run in approximately even time, *i.e.* the 100 yards (10 seconds), the 200 yards (20 seconds) and the 300 yards (30 seconds). The number of races run whose distances lie between, say, 40 and 300 yards is, however, very numerous, and no purpose would be served by a detailed consideration of each. It is therefore proposed to concentrate on a discussion of the 100 yards and to add a few words in regard to the 220 yards race. The same basic principles will apply to any sprinting distance, and these can be best studied in a consideration of the 100 yards race, which is, after all, *the* sprint.

The 100 yards has been a championship event in this country since the inception of the annual Amateur Athletic Association Meeting in 1866, in which year it was won in $10\frac{1}{2}$ seconds. In the following year it was won by a schoolboy from Eton College in $10\frac{3}{4}$ seconds, this being the maximum time ever taken for the distance in the A.A.A. Championship Meeting. Ten seconds was first reached in 1886, until which time the 'Varsities (Oxford and Cambridge) and the London Athletic Club appear to have held a monopoly of champion sprinters. After this amongst A.A.A. sprint champions one finds such great names as E. H. Pelling, C. A. Bradley, A. F. Duffey (U.S.A.), J. W. Morton, R. Kerr (Canada), R. E. Walker (South Africa), G. H. Patching (South Africa), who, incidentally, was the first man to record inside "evens" in this meeting—he did $9\frac{1}{4}$ seconds in

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1912—and W. R. Applegarth. Since the War the list is even more bestudded with athletic “stars,” including W. A. Hill, H. F. V. Edward, E. H. Liddell (who still holds the Championship and British Record of $9\frac{7}{10}$ seconds), H. M. Abrahams, L. Murchison (U.S.A.), those two splendid German sprinters R. Corts and H. Körnig, and, in 1928, W. B. Legg (South Africa). Since the War—in fact since 1923—10 seconds has been beaten four times, showing that even in this event, where owing to the relatively short space of time involved improvement must necessarily be correspondingly difficult to demonstrate, a generally higher standard has been attained. It is of interest also to note that though four of every five championships held to date have been won by Englishmen, the last four years have seen an American, two Germans and a South African annex the event.

The sister event, the 100 metres, as run on the Continent, has naturally featured on every Olympic programme, and though in the first games at Athens in 1896 it was won in 12 seconds, in the next games at Paris in 1900 $10\frac{1}{8}$ seconds was recorded, and this standard has been maintained ever since. In the eight Olympiads held to date the United States of America have scored five successes, Great Britain, Canada and South Africa one each. The British Empire, however, has the honour of sharing in the largest part of the Olympic record of $10\frac{3}{8}$ seconds, in the persons of H. M. Abrahams (1924), P. Williams (Canada) (1928) and J. E. London (1928). The only other Olympic runners to record this time were D. F. Lippincott (U.S.A.) at Stockholm in 1912 and R. McAllister (U.S.A.) at Amsterdam in 1928.

The world's record of $10\frac{3}{8}$ seconds stands to the credit of that sprinting phenomenon of the United States of America, C. W. Paddock, who, incidentally, on the same day that he established this record time also set the world's figures for the 300 metres ($33\frac{1}{8}$ seconds!). Paddock also shares the honour of being

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world-record holder for the 100 yards, which he has on several occasions covered in $9\frac{3}{8}$ seconds—a time also achieved by three compatriots, Kelly, Drew and Bowman, and by Coaffee, of Canada—whilst yet another American, R. A. Locke, holds the record of $20\frac{3}{8}$ seconds for the 220 yards and 200 metres.

A comparative table of the British and World Records at the more common sprint distances may be of interest :

Event (in yds.)	Time (in secs.)	WORLD'S RECORD	Time (in secs.)	BRITISH RECORD
		Holder (year and nationality)		Holder (year and nationality)
100	$9\frac{3}{8}$	<div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">}</div> <div> D. Kelly, 1906 (U.S.A.). H. P. Drew, 1914 (U.S.A.). C. W. Paddock, 1921 (U.S.A.). C. H. Coaffee, 1922 (Canada). C. Bowman, 1927 (U.S.A.). </div> </div>	$9\frac{7}{10}$	E. H. Liddell, 1923 (Gt. Britain).
110	$10\frac{1}{8}$	C. W. Paddock, 1921 (U.S.A.).	—	—
120	$11\frac{3}{8}$	R. E. Walker, 1908 (S. Africa).	$11\frac{3}{8}$	R. E. Walker, 1909 (S. Africa).
150	$14\frac{1}{8}$	C. W. Paddock, 1921 (U.S.A.).	$14\frac{3}{8}$	W. R. Applegarth, 1913 (Gt. Britain).
200	19	C. W. Paddock, 1921 (U.S.A.).	$19\frac{3}{8}$	W. R. Applegarth, 1912 (Gt. Britain).
220	$20\frac{3}{8}$	R. A. Locke, 1926 (U.S.A.).	$21\frac{1}{8}$	W. R. Applegarth, 1914 (Gt. Britain).
250	$24\frac{3}{8}$	W. T. Macpherson, 1891 (N. Zealand).	$24\frac{1}{8}$	E. H. Pelling, 1888 (Gt. Britain).
300	$30\frac{1}{8}$	C. W. Paddock, 1921 (U.S.A.). (Unofficial.)	$30\frac{3}{8}$	G. M. Butler, 1926 (Gt. Britain).
	$30\frac{3}{8}$	<div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">}</div> <div> B. J. Wefers, 1896 (U.S.A.). G. M. Butler, 1926 (Gt. Britain). </div> </div>	—	—

It may be mentioned in passing that no less than three Americans have been credited—as yet unofficially—with having covered 100 yards in $9\frac{1}{2}$ seconds, which represents the amazing performance of travelling the whole distance at an average consistent pace of nearly

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22 miles per hour. In view of what has been said above in regard to man's maximum capacity for the maintenance of full speed it will be realised why this time is almost incredible.

Now, however, let us pass to a consideration of the means by which one aims at attaining to these heights of achievement in human speed, namely the principles of sprinting style and technique.

As has been mentioned above, the following remarks will apply primarily to the 100 yards, though with slight modifications, which will be noted later, they will serve equally well as a basis for the consideration of any sprint distance.

Style must always be a matter of personal opinion, something which is in its essence the possession of each particular individual. For all of us have minds and bodies which differ to some greater or lesser degree, and however machine-like the sprinter may become—and it must be remembered this is his ultimate aim, the repetition of various movements with never-varying automatic precision—still he must always originally have been possessed of a natural self on to which training and experience have grafted some particular technique. And though the consideration of this natural basis does not really come within the scope of this chapter, one must emphasise the fact that it is really this part of the sprinter's make-up which is of primary importance.

First and foremost, be natural! Any adopted style, which necessitates a constant struggle between that which one would do automatically, and that which one feels or has been taught one ought to do, must inevitably produce bad form. It is a noteworthy fact that many of the world's most famous sprinters have had styles which have been far from beautiful and, one believes, far from correct. But such has been their natural talent that this has been capable of overcoming obvious faults. Of course it is always possible to say that had they eradicated those faults they would have been even more phenomenal,

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but nevertheless we incline to the belief that success in sprinting lies rather in the careful cultivation of a pre-existing natural style than in the manufacture of some text-book or trainer-made style. This does not mean that one should continue to run with obvious faults. There are certain points with regard to sprinting about which one can brook no argument. These the would-be sprinter must acquire. But there is a far greater number of points on which it is ridiculous to lay down any hard-and-fast dogmatic ruling. Of these the sprinter must judge for himself, for *they* will constitute his style.

One has often heard it said when a runner puts up a first-class performance with seemingly comparative ease, "What a beautiful style that man has!" And true though this undoubtedly is, how many of these "beautiful styles" are the same? Very few, for each is essentially the natural expression of that particular runner's ability.

Assuming, therefore, that above all the sprinter must cultivate his innate running qualities, let us turn to those more tangible considerations which allow him to utilise these qualities to the utmost extent.

To run a 100 yards as fast as possible means first and foremost running straight, for the shortest distance between two points is a straight line. To run straight necessitates correct balance and perfect body control, and this in turn demands a very high degree of co-ordination of muscular and nervous systems. Again, as the race is run from a position of rest, it is necessary to learn that method by which the inertia of the body at rest may be overcome with the greatest economy of energy and yet the greatest efficiency, *i.e.* to start well. And, having started, one must discover the best way to utilise all that is possible of one's energy for the production and maintenance of speed—in other words, to run and to finish. These are admittedly basic factors of sprinting, and now may be considered in more detail.

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Section 2.—The Start

One deals with this first not only because it is obviously the beginning of the race, but also because it is by far the most vital part of it. It is no exaggeration to say that the majority of sprint races amongst men of approximately equal calibre are won or lost in the first second. And since the effort of overcoming one's original inertia is so great that the first second represents a distance of something less than 5 yards, the fundamental importance of successful starting will be obvious. It is a very true observation with regard to sprinting that a good start means a good finish. Thus the initial impetus of starting which aims at the development of maximum momentum in minimum time (*i.e.* "getting quickly into one's running") requires a considerable knowledge of the technical and mechanical detail concerned, and much steady, persevering practice thereof. The vital factor in the success of a start is the acquisition of that correct balance which it is essential to maintain throughout the race if it is to be run in the straightest line and therefore in the shortest time. Perfect body equilibrium at the end of the first stride goes a long way to ensuring a rapid and satisfactory development of the particular runner's own actual racing style—and without it fractions of a second and correspondingly inches and even feet, which are invaluable in a sprint race, are squandered and lost.

It was this lack of body control in the earliest stages of a race which was very largely responsible for the discarding of the old upright style of starting. It was thought, and presumably still is, as the method is never seen in use in the present day, that starting from the standing position was productive of marked unsteadiness in the first few yards running. Be this as it may, there is a lot to be said for this old style, which has, since the beginning of the century, slowly and gradually dropped out of use entirely. It must be remembered that it was

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used by sprinters whose times, at any rate relatively, considering the vastly improved conditions of track and equipment to-day, were practically the equal of those of the super-sprinters of the present day.

In this form of start the runner places his front foot, whichever that may be, and, as in all cases, it is quite immaterial, fairly and squarely flat on the ground with the toe touching the starting line and the foot at something of an angle to this line. The whole weight of the body should be on this foot, the corresponding knee being slightly bent to allow of a certain amount of elasticity in the foot movement and also to permit the body and head to be thrown well forward over this leg. The rear foot is placed in a hole (the only one required) specially dug crosswise to the direction of running, some 2 feet behind the front foot and just an inch or two to one side of it, to ensure comfortable balance. The arms meanwhile are held in such a position that when the runner starts to move they swing almost automatically into that particular action which the runner favours.

It will be evident that if this position is carefully assumed there is no obvious reason why balance should not be perfect—in fact more perfect than in the modern crouch or “all-fours” style, which, after all, is certainly not nearly as natural a stance. There is nothing forced about the stand-up starter; his arms are more free to drop quickly into their usual action; and since he has but to drive his body-weight forward, whereas the crouch starter has also to give it upward momentum, it would seem more than probable that he is more quickly into his normal striding.

There is really so little adverse criticism possible of the stand-up start that one would not be at all surprised to see a recrudescence of its popularity in the not too distant future, once some sprinter of note has again proved its efficacy.

In the meantime, however, the crouch start is in vogue and universally adopted in sprint races. With regard

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to the reason for this, a parallel has been drawn to the animal world, in which, when a beast is preparing to put forth some particularly great effort, it automatically gathers itself together or crouches, ready for the initial spring of its attack. This parallel, however, must not be carried too far, for the sprinter neither wants to be so tensed up that he is uncomfortable nor does he want to leap out into his first stride. The one means loss of the all-essential poise; the other, loss of time before normal striding action can be picked up after the momentary pause caused by landing from the initial jump forward. Again, the sprinter who adopts the crouch start must attempt to be just as natural as possible, to assume his starting position in the most comfortable and easiest possible way, and to start running steadily, without jerk or jump and yet withal rapidly—in other words, to glide out into full speed as it were. Apart from the actual material gain in distance of an efficient start the psychological effect of “being out” an inch or two ahead of one’s competitors—a fact which can be sensed rather than seen—is worth probably a foot or two later in the race, and is yet another reason for concentration on the development of a sound starting technique.

Before discussing the various positions required by this method of starting it is necessary to describe the “holes” which form an essential feature of this style. That the start may be successful it is of vital importance that these starting holes should be both correctly placed and correctly fashioned. First of all one must reiterate that one of the sprinter’s primary objects is to run straight. Furthermore, Nature has normally placed our legs a certain distance apart, and it should be the aim of every sprinter to maintain this distance as he runs, *i.e.* to allow each leg its own definite straight line to follow. Either placing one foot behind the other or running with the feet wide of their respective natural lines is an equally bad fault. Hence, to ensure at least a correct beginning in this respect, let the sprinter stand with toes touching

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the starting line, looking down the track to the finish, and then with feet together mark the position of both middle toes. Lines drawn back from these two points at right angles to the starting line will give the normal distance apart that the legs should be both in starting and in running. And it is on these two lines, therefore, that the required holes will lie. The front hole (as has been said, it is immaterial which foot is in front, provided it is always the same one) should be placed approximately a foot's length or a little less, some 7 to 9 inches, behind the starting line. The exact position is found by kneeling down, placing the fingers on the starting line, the feet on their respective lines at right angles to this as already drawn, and simply finding the most comfortable position. This will, incidentally, also give the position, by the mark made on the track by the back toe, for the rear hole. Once the sprinter has made sure of the best positions of these two holes for himself, a very good plan is to have a piece of string with knots indicating the distances required. Incidentally, it should be mentioned that in placing the back hole, the sprinter being now in the kneeling position, the knee of the rear leg should come approximately opposite the instep of the front foot, but, as ever, small deviations from any set rulings, providing they afford ease and comfort, must be accepted as correct.

The holes themselves should be dug with a trowel, which the sprinter should always have with him as part of his equipment, and preferably a flat or mason's trowel. The great essential with regard to holes is to see that their back wall when dug is square to the direction of running. Otherwise they will tend to throw the sprinter out of his desired straight line, with consequent inevitable loss of balance from the very start. The holes should be just deep enough and wide enough to receive comfortably the ball of the foot, *i.e.* all that part of the shoe which bears the spikes. Roughly, this depth is about $2\frac{1}{2}$ to 3 inches, though the front hole can often with advantage be rather more shallow than this.

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The back wall of the hole should be absolutely straight and inclined at an angle of about 75 degrees, though if the track be at all soft it is well worth while making this back wall practically perpendicular, for it is very necessary to have this quite firm to permit the rear foot to have all the purchase it requires when the start is actually made. The front of the hole should be scooped out to avoid any chance of the toe catching it as the foot comes out.

The remaining considerations *re* the start are best discussed under the three sub-headings of the starter's commands: — "On your marks!"; "Get set!"; "Go!" (pistol). (French: "*A vos marques*"; "*Prêt*"; German: "*Auf die Plätze*"; "*Fertig*.")

"On your Marks!"—The position to be taken up in response to this command is shown in Fig. 2, which should be consulted in connection with the subsequent description. The sprinter, keeping warmly clad until the last possible moment, walks quietly forward the two or three yards from where he has been standing behind his previously dug holes. He then places one foot firmly and squarely in the back hole, the other in the front hole, and kneels down comfortably with his hands on the starting line. This position must be essentially one of ease and relaxation—a sort of "lull before the storm!" The knee of the leg corresponding to the rear foot should, as has been said, be on the ground approximately opposite the instep of the front foot and about an inch or two to one side of it. The relative position of this knee will, of course, depend ultimately upon the stature of the particular athlete, and especially upon his length of leg. The legs must be so



FIG. 2.

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adjusted that there is no feeling of cramp or tension. The back is held straight and the head and neck should bear the same relation to the trunk as they do in the normal upright position, *i.e.* the neck should not be bent back, and the habit of looking towards the finishing tape, apart from one preliminary glance just to make sure that one is facing squarely in the direction it is required to run, is definitely to be deprecated. The eyes actually should be focussed on that spot, preferably previously marked on the track as will be described later, where it is intended that the first foot shall strike—approximately some 3 feet away down the track. This is quite possible without any strain when the head is held at its natural angle.

The arms in this position are most comfortable if just slightly bent at the elbow. As regards the position of the hands on the starting line, there is a definite optimum for each individual. This is most simply discovered by raising the shoulders a little whilst still kneeling, and swinging the arms gently straight back and forward. If the shoulders are now again gradually lowered, the arms still swinging, a stage will be reached when the fingers just brush, and mark, the surface of the track. These two marks will give the correct positions for the hands on the line. The distance between the two hands varies from about 18 to 24 inches according to the width of the shoulder and of the hip of the athlete concerned. But whatever these may be, this simple swinging method will give the necessary clearance for the legs when these come forward in the actual start, and at the same time obviate the almost equally bad fault of having the hands too far apart, which, when the "set" position is assumed, leads to the shoulders being lower than the back, and a subsequent "dive" start, the disadvantages of which will be pointed out later.

There are several ways of holding the hands. That in the diagram is one of the commonest, the thumb and index finger being on the line and the remaining fingers

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ranged back from the index. Another favourite method is to have the tips of both index and middle fingers together on the line, the thumb as before, and the other two fingers forming the third "leg" of a tripod. Others, again, seem to prefer to the elasticity of these two methods the firmness and steadiness obtained by placing the middle joint of the index and middle fingers together with the thumb as before on the starting line. The choice is really a matter of individual preference and experience.

"*Get Set!*"—It is this position which is the counterpart of the animal's crouch before it springs. The whole poise of the body is now altered. Every muscle is now tensed, every faculty on the *qui vive*. And it is now that a satisfactory taking up of the preliminary "On your marks!" position bears good fruit, for to remain "set" for anything up to two seconds, which time is perfectly legitimate and may be demanded by any stringent starter, requires a high degree of perfected body balance. And steadiness at this stage is essential if both a good and a fair start is to be made. One does not propose to deal with the practice of attempting to "beat the gun"—it is not only unsportsman-like, but unprofitable if the starter knows anything about his business.

The rear knee is now raised some 12 to 15 inches off the ground (*see* Fig. 3) until the back is parallel to the ground. The head and neck still maintain the same relative position, *i.e.* in line with the back, and the eyes remain fixed on the spot where the first stride will land the leading foot. The arms should now be fully

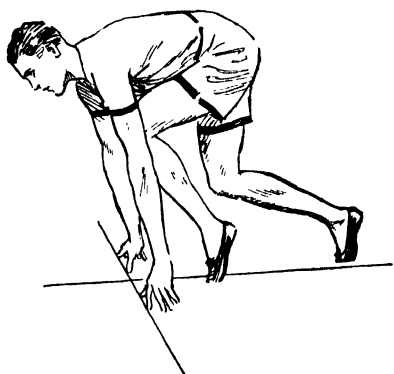


FIG. 3.

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extended, so that the body's centre of gravity is thrown forward till it comes to lie in the centre of a tripod formed by the two arms and the front leg. Equilibrium should now be such that if the hands are raised the runner will tend to fall forward on his face. No weight should be borne by the back leg, whose particular function is the provision of propulsive force when the pistol is fired. A fault to be avoided is the raising of the hindquarters above the shoulders, which, like having the hands too far apart, tends to throw the runner downwards as well as forwards when he starts, whereas his aim and object should be to come straight out of his holes with body parallel to the ground and gradually rising, until, as it were, this human bullet reaches the optimum height of its trajectory some 30 yards down the track—a height which it must strive to maintain until the finish.

Another common fault is that of bending the neck backwards. This automatically produces a strained and uncomfortable position and militates against steadiness. Though the "set" position is one of tension, it must not become one of strain, or else true body balance will be lost. At the command "Set!" a good deep breath should be taken and held, and this will in all probability last the sprinter throughout the entire race. The importance of this breath is that it expands the chest, and by so fixing the thorax gives a steady superstructure from which the arms can work.

"Go!" (Pistol).—It is in the actual start that the perfect co-ordination of body and mind which can only be the outcome of much painstaking practice and considerable experience shows to most advantage. This co-ordination between the sense of hearing and the muscular system will reduce the latent period, which to some minute extent always exists between the firing of the gun and the first movement of the runner, to a minimum. This first movement is essentially a drive from the rear leg and a forward lift from the front. This is admirably

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shown in Fig. 4, especially by the sprinter on the right (H. M. Abrahams).

We have already stressed the importance of coming out of the holes straight, and this, together with an additional impetus, is ensured by a correct arm action. There are various styles and lack of style in arm action, but whatever is the runner's normal action he should adopt it from the moment the gun goes off. In the illustration all three runners are showing this well. The man on the right favours a cross-arm swing, and

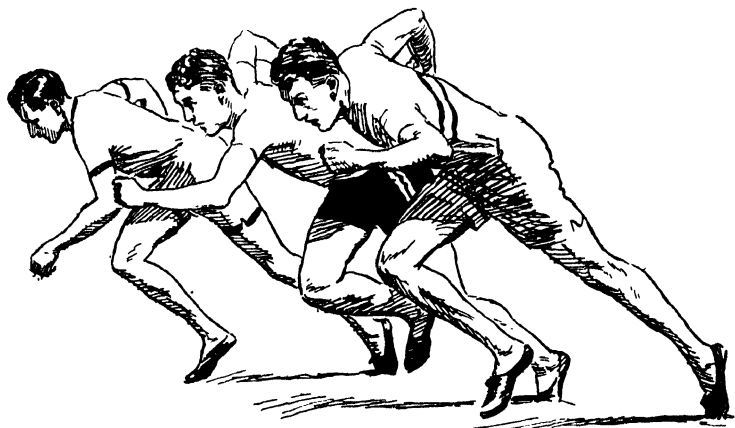


FIG. 4.

the other two (the man on the left being slightly ahead of his opponents at this early stage) are using back and forward piston arm action; but all three have adopted the correct position for their respective arms even before the first stride is completed.

As regards this first stride, we are of the opinion that it should form part of a regular series of gradually lengthening strides which ultimately take the runner into his full speed without any perceptible change of action. The "chopped" or abbreviated first stride, followed by some five or six short, very rapid strides, and then by a definite lengthening out into normal striding—a plan

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very commonly adopted by American sprinters—seems most conducive to lack of steadiness and consequent early loss of form. The start should be essentially a smooth, even gliding out from the holes, with a uniform acceleration of speed to the maximum. The first stride, therefore, will vary in length according to the individual, and he should ascertain by repeated practice where his first foot out tends to land normally without any conscious effort towards either lengthening or shortening this stride. The average length of the first stride is about three foot lengths of the particular sprinter. Once a runner has discovered his own particular length, he should take particular note of it and in practice as well as races mark this spot on the track in front of him and make sure he hits it every time he starts. The knotted string already mentioned can be made of sufficient length to include this marking also, as well as that of the two starting holes.

It is obvious that all energy at the start should be concentrated on the production of momentum, and hence any early exaggeration of knee-lift (the feet in the first few strides should never be raised more than 6 inches above the ground) and any early tendency to raise the trunk to a more upright position are to be deprecated. Too long a first stride is one of the commonest causes of this last-mentioned fault. In reaching out for a long first stride the centre of gravity is thrown back, the body becomes more upright, and energy is unnecessarily dissipated with resultant loss of development of speed. Too short a first stride, on the other hand, is the equivalent of the jabbed or chopped stride, the disadvantages of which have already been pointed out.

Section 3.—Striding

(Under this heading it is intended to discuss the race as apart from the actual start and the finish. It is chiefly in this connection that the question of style and form crops up. As has been said, for the sprinter all

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possible available energy must be put into the production of speed and hence certain fundamental truths will simply need a mention.

Again one must stress the importance of running straight. Any deviation from the line which marks the shortest distance between start and finish means loss of time. Then, whatever the style adopted by the sprinter, it must be such as to be capable of maintaining true body balance. Any energy required to correct a wobble or some uneven or uncontrolled leg or arm movement is wasted energy.

It will be obvious, too, that since the forward direction at the greatest velocity is the sprinter's real objective, any energy devoted to upward spring or bounding is lost as far as the actual result of the race is concerned. In other words, one must run as close to the ground as possible.

(There are two factors in running a sprint race which have to be balanced to a nicety to achieve the best results. These are the length of the strides used to cover a certain distance and the rapidity with which those strides are taken. And the latter is really the more important factor, for it has been amply proved that the man with the quicker action and the relatively slightly shorter stride can produce a better time than the man whose length of stride prevents his getting in quite so many strides in covering any given distance. The tendency is always rather to overstride, and the sprinter must aim at that length which will allow him the quickest action. Though, of course, this length will vary considerably according to the type of sprinter—an average stride when travelling at full speed should lie between 7 feet and 7 feet 9 inches.)

In the following considerations of striding styles, Fig. 5 should be consulted.

For simplicity one may consider the body of the sprinter during his race under the three headings of (a) Head and Trunk, (b) Arms and (c) Legs.

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(a) *Head and Trunk.*—One of the most important factors in good sprinting is the cultivation of a correct “body lean” or “running angle.” We have shown how, on leaving the holes, the body is almost parallel to the ground. It should at all costs never be allowed to become quite upright, for the maintenance of a certain amount of forward body lean keeps the centre of gravity thrown forward, thus both materially assisting good balance and, by taking the body weight very largely



FIG. 5.

off the legs, leaving them free to act more or less purely as propulsive agents. By its forward lean the body should be, as it were, continually falling forward, and hence drawing the legs after it, and therefore reducing to a minimum the time of contact with the ground, thereby conserving energy for the production of speed. Furthermore, this drawing forward of the legs accomplishes an additional saving of energy in making it im-

possible for the runner to indulge in any upward drive or bound to any extent. One of the chief arguments in favour of a shorter stride is that it is conducive to a better running angle. This angle when the runner is in full stride, which will not occur until almost one-third of a 100 yards race is run, should be such that when the back leg is fully extended, this leg, the back and the head and neck should form a straight line (see Fig. 5), at about 60 degrees to the horizontal.

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Erect running also involves considerable jarring—a complaint often to be noted in flat-footed runners. On the other hand, it must be noted that an over-exaggerated body lean is almost as bad a fault as being too erect. It leads to a staggering gait, a continual state of over-balance, which idea, of course, is inimical to any possibility of fast running.

The upper part of the body, as has been stated previously, was more or less fixed by the initial breath taken on the starter's command "Get set!"—and from this compact centre the arms can work to greatest advantage.

The head and neck must throughout the race be kept in relatively the same position to the trunk that they have when standing in the erect posture. (Any tendency to let the head go back—the so-called "chin-lift"—which is always hard to control, particularly at the end of a race, must be as far as possible checked completely.)

(b) *Arms.*—In sprinting the arms are the more important members, for on their correct action depends the efficiency of the legs' work. The arms are the balancing factors of the sprinting machine, and the importance of balance has already been well emphasised. Whatever style of arm action may be adopted, provided it works harmoniously with the legs, it will serve to control the latter and hence to produce straighter and more powerful running. }

Again, whatever style the sprinter may decide suits him best, there are certain fundamental facts with regard to arm action which may well be considered before one enters into a brief discussion of the most common varieties of style.

The essential fact to bear in mind is that the arms are body controls. It is therefore obvious that an arm which is swung outside what may be termed the sphere of body balance is a retrograde force. By this one means that the arm which swings so wide of the body that the hands are clear of it either behind, or to the side, or, for

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that matter, equally as much, above the shoulder level, is not only useless as an adjunct to the propulsive forces, but definitely a drawback. The lack of arm control is evident in all bad sprinters throughout the race, but the fault is found particularly at the start and the finish, even in first-class runners. Always aim at maintaining the arm action one adopts from gun to tape. Any arm action must have as its basis a low carriage of the hands, and, furthermore, must be such that it is possible to obtain by it perfect synchrony with the leg action. One particular arm must always be in action at the same moment as the opposite leg if true poise and equilibrium are to be satisfactorily maintained.

Again, the shoulders in any style must be brought into play, for a well-used shoulder is a powerful adjuvant to the assistance rendered by the arms. The shoulders, however, should never be twisted nor shrugged, but, like the rest of the upper part of the body, held relatively steady, level, and facing as far as possible to the front, *i.e.* in that position in which they can most suitably serve as a fulcrum, from which the arms may work.

The two most prevalent styles are the forward and backward "drive" or "piston" method (in which, with the arm locked at the elbow, the arms are forced from front to rear in a line parallel to that in which one is running, with the forearm all the time being kept roughly parallel to the ground) and the "cross-swing" (in which the arms are worked from side to side with a sort of rotary movement, the hands being about the level of the pit of the stomach and the elbows turned well out). A variation of the first of these, "the chop," one cannot advocate, as its very nature—an upward and downward swing from hip to shoulder with the hands directed forward—must inevitably lead to a forcing back of the centre of gravity and much too erect a carriage. Both the first two styles mentioned have many advocates, and it would be unwise to say one is right and the other wrong. Though admittedly both give good control, it

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is hard to see how a swing backward and forward can possibly add anything to one's impetus, for one part of the movement is exactly counteracted by the other. In the cross-swing, on the other hand, there is at no time any backward force applied, thus allowing the legs to make a relatively greater propulsive effort in the forward direction. The simile of the shot from the gun may again be used here, for the rotary cross-swing action corresponds to the rifling of a gun barrel, which, as everyone knows, serves to keep the missile—in this case represented by the human body—travelling in a dead straight line.

The choice of an arm action, however, is essentially a matter for the individual, but whatever his choice he must be careful to see that it fulfils the fundamentals noted above. To these may be added, perhaps, the advantage of running with a closed fist always, whether this be gripping a running cork or not.

(c) *Legs*.—As we have said, the legs are really only secondary to the arms, though, of course, being the actual propulsive agents they are of vital importance. But a good arm action will automatically ensure efficient leg work. The movement is essentially a powerful stride, the front leg being lifted well up ("knee-lift") and thrown out straight to the front, each in its particular line. This should ensure the foot landing with toes and ankle in line, and the foot pointing straight ahead. The sprinter must be "up on his toes" all the time. As we have said, the flat-footed runner is the erect runner, and consequently relatively slow. Though the action, always assisted by a good body lean, is really a reaching out for distance, the importance of avoiding over-striding has already been stressed. Again, though one must be on the toes, any bounding element in the stride is the equivalent of wasted energy, as the feet should always be as near the ground as possible and on it for as short a time as possible.

The common fault of kicking the foot up behind is

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automatically conquered by a good knee-lift, though, of course, it must be remembered that this, too, can be overdone to the extent of driving the body up into an erect posture. One must never run with the knees bent ; the drive from the leg comes from the locking of the knee (*see* Fig. 5) as the body comes forward over the foot then on the ground. Such faults as running with one foot striking the ground directly in front of its fellow, or, on the other hand, with a wide base and the feet too far apart, are almost too obvious to need comment.

Leg action is not difficult—it is mainly natural—and if one keeps aware of the possibility of developing certain minor faults, it is enough to say, “Look after the arms and the legs will look after themselves ! ”)

Section 4.—The Finish

Even as many a good race is won in the first few yards, so it is lost in the last few. In sprinting one is so apt to become intrigued with all the interesting details of proper starting technique that thought and practice of that most important item, the finish, are inclined to be neglected. As will be shown later, it is not difficult to train for a finish, and the results well repay the effort.

We are of the opinion that for the average sprinter the best finish to aim at is none at all ! By this apparent paradox one means that the sprinter should simply “run through” the tape, aim at a point some 10 yards or so beyond it, and concentrate purely on maintaining his style at its maximum efficiency right up to the very last moment. There are, however, various definite forms of finish which in the hands of an experienced and carefully trained sprinter may be of advantage. Chief of these, perhaps, is the “drop” finish, in which practically in the last stride the chest is thrust forwards and downwards, the arms being dropped and thrown back a little. A modified form of this, and, incidentally, a very

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perfect finish, is shown in Fig. 6 (J. E. London). Another form is that known as the "throw" finish, in which in the last stride one side of the body—one shoulder in particular—is thrown strongly forward—lifted off the ground as it were—against the tape. In that this inevitably means some loss of the rhythm of striding and of body balance one is inclined to think it of doubtful value. And the

same remark, but to a much greater degree, applies to the "jump" finish, despite the fact that it is consistently used by such a master of sprinting as C. W. Paddock.

In this style a definite long jump is made from a point some 2 yards or so from the tape, but it seems obvious, surely, that not only must the complete change of action from striding to leaping cause some shade of hesitation,

however slight, but also that the energy put into the upward movement of the "jump" would be much better expended in a purely forward direction at this stage of the race.

Whatever method is adopted, a universal rule to be followed out is always to slow up gradually after finishing. More muscular trouble comes to the genus sprinter after the tape has been broken than from any other part of his sphere of activity.

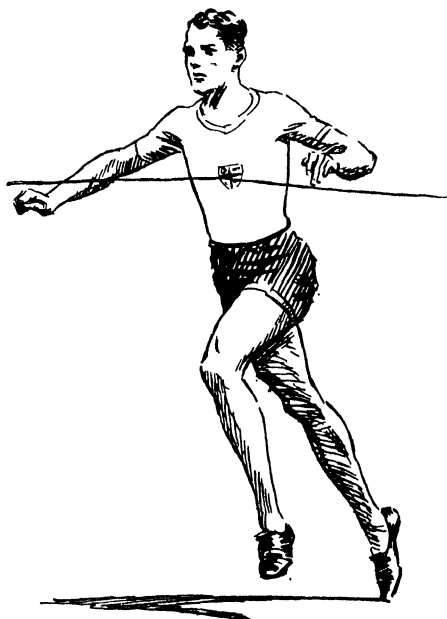


FIG. 6.

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Section 5.—Training

We intend in this section to deal with a few points of particular applicability to the sprinter. He, of course, like all other athletes, must first have undergone a course of general training, the fundamentals of which are fully dealt with in a previous chapter.

The sprinter has two primary objects in his training : the one, perfect muscular condition ; and the other, even more important, perfect control, which means the training of his nervous system to co-ordinate with his muscles. He has not to worry about tactics and judgment, he has but to develop his capacity for producing speed.

It is well, however, for the would-be sprinter to realise that this process is a lengthy one, and though always an interesting, nevertheless an arduous one. A sprinter cannot be made in a week nor yet in a month. Hence the great importance of training to schedule. Be content to go slow, to absorb one by one the various minutiae of sprinting technique until each is so inculcated into your very being that the result is almost automatic perfection—the maximum of speed with what is apparently the minimum of effort. As someone has said, it is a process of “ facilitation by repetition.”

In the early stages of training, indoor exercises and walking, with a certain limited amount of good massage, are the chief indications. The walking should, for the sprinter, be more in the nature of a stroll—just sufficiently fast to keep him warm and by stimulating a good circulation help to loosen up his muscles. The exercises used are many and varied, and should form not only the basis of the early part of his training, but really to some greater or less degree according to the season, etc., a part of the daily routine of his life. The best of all exercises is the closest possible imitation of one's running action that can be performed in a limited space. This allows of a constant repetition and practice of the

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movements that will ultimately be required on the track, and hence tends to the production of that machine-like automaticity that the sprinter so greatly needs. The mere fact of having to perform this exercise within a space of about a square yard—which in itself will at first prove to be a difficult task—is conducive to gradual improvement of powers of balance, whilst simply by constant practice one finds that there occurs a general speeding up of all the movements which comprise a sprinting action, together with a very satisfying increase in one's ability to co-ordinate body and mind. Running up stairs, skipping, dumb-bell exercises and physical jerks generally are all good for the sprinter. He must in his training be particularly careful not to neglect his shoulder and arm development; and the use of lead weights in practising an arm action or arm exercises is of great assistance in strengthening the muscles concerned.

When the stage of getting out on the track is reached, the important thing is to have a plan of action and to stick to it. Train when you train—it both stimulates the brain to a higher pitch of keenness and quickness and avoids the obvious physical disadvantages of catching cold. A really hot sun is the only excusable cause for neglecting this dictum! Track training should always begin with the process of “limbering up”—just jogging about, stretching the muscles, gradually working up till one is moving a little faster, always on the toes and with the knees well up. This serves to loosen up all the muscles and get the sprinter into suitable condition for the more strenuous work of the day. This should always include a certain number of starts, and in this, as in all sprinting training, it is of the greatest assistance to train in company and if possible with a friend, especially one who knows something about the business in hand. Six starts are ample for one day, and at first most of them should be made without a gun and as slowly as though one were imitating a slow motion cinematograph picture—at the same time concentrating

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upon all the many details of starting technique discussed previously. Later, starting from the gun is most valuable. With regard to actual running, this should be carefully moderated. In the earlier stages an occasional 120 or 150 yards is excellent for producing sufficient stamina. After one is relatively fit, however, apart from a "hundred" run full out every week or so—preferably not "against the watch"—one's running should consist of much "pattering," or practice of rapidity of action, allowing this three or four times to break out into full striding for 50 yards or so and then on to some 30 yards of racing, followed by a steady slowing up. Various alternatives to such a scheme to suit particular conditions or requirements will be obvious. And never forget that a day's training work is incomplete without practising a finish. This is most simply done by striding for some 40 yards or so to a marked line, then accelerating to full speed up to another marked line some 40 yards farther on, and at this second line making a definite finishing effort.

Once fitness has been attained, and especially if one is racing every week-end, two other outings on the track during the week are ample to maintain condition, and roughly half an hour should be plenty of time on these outings to get all the practice required.

In conclusion, in training or in racing the sprinter must pay particular attention to his running shoes, and the way they are worn. A good shoe is worth anything up to 2 yards in a "hundred!"

Section 6.—The 220 Yards

Though to-day it seems natural to class the 220 yards race automatically with the regular standard events of a programme, it had practically no history before the opening of this century. The 1900 Olympic Games of Paris were the first to see it (200 metres) featuring, and it was not until 1902 that it became

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an A.A.A. Championship event, whilst it is a noteworthy fact that even to this day it is not in the Oxford v. Cambridge programme, though in their combined meetings with the great American Universities it now occurs regularly.

The Olympic Games 200 metres has so far been an "all-American" affair, having been won five times by the United States and twice by Canada. The former country shares the Olympic record of $21\frac{3}{8}$ seconds (in the joint persons of A. Hahn, 1904 and J. V. Scholz, 1924) with Germany (Körnig, Amsterdam, 1928), and holds the world's record of $20\frac{3}{8}$ seconds, which stands to the credit of R. A. Locke. This amazing time represents an average speed of 22 m.p.h. over the whole distance!

Though instituted in 1902, the A.A.A. "furlong" was not run in under 22 seconds until eleven years later, when W. Applegarth won this distinction. To his credit also stands the British record for this distance of $21\frac{1}{8}$ seconds, only $\frac{2}{8}$ seconds outside the world's record. It is indicative of the advance in sprinting ability since the War that of the ten championships run to date seven of the times recorded have been inside 22 seconds, though it needs must be recorded that in the whole series of 220 yards championships some 40 per cent. of victories have been claimed by non-English sprinters.

In this country the 220 yards is practically always run round a bend, the several runners, therefore, starting *en échelon*; but in other countries, and America in particular, tracks with a "straightaway" furlong are rather the rule than the exception. Though, according to the original definition of sprinting agreed upon at the beginning of this chapter, the 220 yards undoubtedly comes under the heading of sprint races, still it is only fair to say that in this as in every race of 150 yards (taking this as a purely arbitrary figure) and over there is either consciously or unconsciously a period of the race when

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the runner rests on his momentum as it were, in an attempt to conserve his remaining supply of energy for a final burst, the length of which will, of course, depend upon individual ability.

The "220 man" as a type tends to be of rather bigger build than the shorter distance sprinter, taller, with big legs very strongly muscled, and it is possible for such a man of exceptional strength to run his 220 yards at his maximum speed all the way. But probably for the majority of runners the furlong is divided into a sprint start of some 75 yards, a middle stage, when momentum is maintained but not definitely increased, of about 75 to 100 yards (the distance depending upon the capacity for finishing), and a third stage of from 50 to 70 yards.

The added element that comes into this race when comparing it with the "hundred" is stamina, and it is almost incredible how completely even a fit runner can exhaust his energy supply in running so relatively short a distance. For this reason, to the remarks already made on sprinting training one must add the necessity for "working out" over longer distances up to and including 300 yards. The acquisition of this stamina is of very vital importance, for it is the gruelling fight up the straight, when it has been estimated that even the trained athlete is travelling at at least two yards per second slower than his possible full speed, that so often means the difference between victory and defeat. And it is in this final stage also that the continued practice of a definite sprinting style stands one in good stead, for the ability to retain form right through to the end of a "220" is an almost invaluable asset. As regards the various points already discussed in connection with starting, striding and finishing, these apply equally well over the longer distance and must be practised just as assiduously. One point, perhaps, may be mentioned regarding the circumnavigation of a bend when the race is run round a curve, and this is that an arm action in which the inside

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arm is dropped lower while the other arm's movement is increased in force tends to keep the body's centre of gravity from being thrown out, and hence to the maintenance of a more stable equilibrium than would otherwise be the case when not running down a straight.

CHAPTER VII

MIDDLE-DISTANCE RUNNING

Section 1.—General Principles

MIDDLE-distance races include anything from a quarter-mile to a mile. This statement may not pass unchallenged by those who wish to preserve the nomenclature of the nineteenth or even early twentieth century ; but it seems justified if one considers for a moment the quality of the various races.

It is true, of course, that the programmes at American sports meetings to-day describe the quarter-mile as the 440 yards dash, presumably indicating thereby the intention to classify this event as a sprint ; but very few people can run a quarter from pillar to post as did Eric Liddell in the final of the 400 metres (437·45 yards) at the Olympic Games of 1924.

It is, strictly speaking, a mistake to describe the average method of running a quarter, no matter how rapidly and brilliantly, as *sprinting*, which implies top-gear the whole way and even time (or faster), unless one is prepared to call half-miling sprinting also, on the ground that one attempts to go his fastest all the way, capping a 53-54 first quarter with whatever burst of energy one may ! Therefore, it is probably more logical to confine the term sprinting to races up to and including 300 yards, grouping the quarter with middle-distance events, and in particular because most quarter-milers, unless they are pure sprinters attempting an unusually lengthy event, adopt methods of running and tactics similar to those employed in the half-mile.

For slightly different, but, it is submitted, equally

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sound reasons, the mile ought to be regarded as a middle-distance event. In these days of fast miles, when 4·20 is considered almost commonplace and 2·4 or 2·6 is regular time for the first half of a championship race, the inclusion of the mile among long-distance events seems erroneous, no matter what may be the private feelings of the competitor during the progress of the race. And to clinch the argument, scarcely a miler of note in recent years, with the exception of the remarkable Nurmi, has been a successful performer over longer distances—indeed the modern miler is usually the half-mile type of runner.

It is by reason of this classification of the quarter and one mile and their affinities to the half-mile that it is possible to apply most of the suggestions about to be made to all three events. Moreover, they may be applied, *mutatis mutandis*, to those races less frequently run in this country which fall into this class, namely the 600 yards, 1000 yards and 1500 metres. The first is really an elongated quarter of a particularly exhausting kind, usually run by the half-miler; the second is run as an extension of the half; the third is the Olympic and international event which takes the place of the English and American mile, and which is about 120 yards short of that distance. It is proposed, therefore, to consider the general principles which may be said to govern middle-distance running, and to pay further and individual attention to the particular events later in this chapter. Before discussing these principles, however, perhaps an analysis of the types of athlete which comprise middle-distance runners may not be out of place.

Except in the quarter-mile, the middle-distance runner is almost invariably spare and slim, of medium height, long in the leg, with a springy carriage, quite deep-chested, and possessed of great powers of endurance and a rich store of nervous energy. The muscular development is less pronounced than in the case of the sprinter, length taking the place of thickness; and although the

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quarter-miler may be a middle or even a heavyweight, the true middle-distance runner is light in weight, with length of stride as a compensation.

Let it not be imagined, however, that in order to be a successful middle-distance runner one needs to possess all these physical attributes. The case is far otherwise. Generalisations are proverbially dangerous and perhaps unusually so in athletics, wherein no two competitors are alike. Therefore, whilst it will be found that most middle-distance runners are endowed with the majority of the qualities outlined above, there is no reason whatever why athletes who are physical exceptions thereto should not succeed. They will succeed indeed, either in spite of their lack of what may appear to be essential qualities (*e.g.* a long stride) or in consequence of their persistent cultivation of such qualities as they do possess. Indeed, as probably the perfectly endowed individual runner has not yet been nor ever will be born, one may safely say that each athlete depends upon such development of natural talent for most of his success, and, further, that according to the lack or development of various qualities will his best distance and method of running be determined.

Roughly speaking, five categories of middle-distance runner exist. In the two chief are to be found those who combine (*a*) the quarter and the half, (*b*) the half and the mile. In the third, and rarest category, are those who excel over all three distances. The fourth and fifth embrace those who combine quarter-miling with pure sprinting or who do not descend (with great success) below a mile.

Among the most brilliant exponents of quarter and half-miling who belong to the first category may be mentioned P. Edwards of Canada, capable of 1.52 and inside 49; Ted. Meredith, former world's record holder at both distances, and present holder at 440 yards with 47 $\frac{2}{3}$; the German, Hans Braun, who fell in the late War, and who won the A.A.A. Half-mile

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Championship in 1909-11-12 ; and E. C. Bredin, who, some thirty odd years ago, under less favourable conditions than those pertaining to-day, won championships in $49\frac{1}{8}$ and $1\cdot55\frac{1}{8}$. In a slightly different category, although belonging to this type of runner, are the late Captain Halswelle, winner of the 400 metres in the 1908 Olympic Games, who still holds the British quarter-mile record ($48\frac{3}{8}$), and who excelled also at 600 yards ; and in the late 'eighties H. C. L. Tindall, who still holds the championship record of $48\frac{1}{2}$, and formerly held the record for 600 yards. Of these men, Edwards is fairly tall and relies on a colossal stride rather than any definite sprint finish ; Meredith was tremendously powerful, rather stocky and very fast ; Braun, a beautiful stylist, slim and long-striding ; and Tindall, tall and spare.

In the second group (those who combine the mile and half-mile), Albert Hill, winner of the Olympic 1500 and 800 metres in 1920 and holder of the British mile record ($4\cdot13\frac{1}{8}$), C. Ellis, Lloyd Hahn ($1\cdot51\frac{1}{8}$ and $4\cdot12\frac{7}{8}$, both indoors) and the young Frenchman, Séra Martin, who holds the world's record for the 800 metres ($1\cdot50\frac{3}{8}$), are perhaps the best modern examples ; and prominent pre-War experts were P. J. Baker, W. E. Lutyens, F. J. K. Cross, and J. P. Jones of Cornell, who achieved $1\cdot53\frac{1}{8}$ and $4\cdot14\frac{3}{8}$. With the exception of Ellis and Hahn, who are stocky, these men are slim, fairly tall and long-striding, and they are all gifted with a great degree of stamina.

The third important group contains the *rare aves* who can excel at the 440, 880 and mile. Many of those who belong to the second group above mentioned are capable of doing good time in the quarter—indeed, it is inevitable that the first-class half-miler and even miler should do so—but to excel in all three is granted to exceeding few. The greatest of them at the present day is undoubtedly Dr. Otto Peltzer, who holds the world's record at no fewer than four distances—500, 1000 and 1500 metres, and

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880 yards. About 6 feet 2 inches in height, very spare, amazingly long in the leg with devastatingly long strides, and gifted with tremendous nervous force, he is one of the most remarkable athletes the world has ever seen. England has given the world another master runner, H. B. Stallard, the only man to win the British mile, half-mile and quarter-mile championships, also very slim, long-striding and richly endowed with nervous energy; and the American M. W. Sheppard is the third man whose brilliance entitles him to a niche in this highest hall of middle-distance fame, for he has won not only the 1500 and 800 metres in the Olympics, but also held until quite recently the world's record at 600 yards.

To the fourth and fifth categories belong those athletes poles apart, and many of them most magnificent, who either combine the quarter-mile with pure sprinting or run the mile alone of the middle-distance events. Among the former, Eric Liddell, British record holder for the 100 yards ($9\frac{1}{10}$) and Olympic record holder for the 400 metres ($47\frac{3}{8}$), and Guy Butler, joint record holder for the 300 yards ($30\frac{3}{8}$) and second and third in the Olympic 400 metres in 1920 and 1924, are brilliant performers. Liddell is not tall, but very sturdy, and capable of sustaining a quick and by no means short stride for the full quarter; Butler is a true quarter-miler of tremendous build and strength, 6 feet 3 inches, long-striding, and of great heart and lung capacity, characteristic indeed of the quarter-miler who cannot excel at a longer distance. Among the fifth group one might cite the Oxonian, A. N. S. Jackson, winner at Stockholm of the 1500 metres in then record time; W. G. George, erstwhile mile record holder; the young Frenchman, Ladoumègue; and the great Nurmi, comparable only with Shrubb in this respect, that both could run a splendid mile or 1500 metres but found it the minimum distance which he could cover at record-breaking speed. Finally, a unique exception to all this grouping is the South African, Bevil Rudd, winner of the Olympic 400

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metres in 1920, British champion over 440 and 880 yards, and capable of a 10 dead 100 yards.

It will thus be evident that all types of men are included among middle-distance runners, and that whilst excellence at one distance is usually accompanied by excellence over another, such is not invariably the case. But if an athlete finds middle-distance running his chief pleasure on the track, he may be well advised, if he has not already done so, to attempt distances other than his favourite, thereby either discovering one more suitable, adding to his repertoire, or improving his skill.

This somewhat lengthy digression serves to prove, if proof be needed, the statement made earlier in these pages that generalisations are dangerous in athletics, and that particularly perhaps in middle-distance running men of widely different physique and style may dispute the same events. Yet inasmuch as the events themselves are common ground, the principles of technique attached to them affect each athlete in a similar manner, and it is therefore profitable to discuss middle-distance races as a whole before dealing with the events individually.

Probably the first idea which mention of the word athletics evokes in the lay mind is the vast amount of severe training involved. That the popular idea is rather exaggerated has been suggested in the earlier chapters of this book, where the true meaning of training, as generally approved in these days, has been explained. It would be superfluous to reiterate here at any length the preliminary steps in training, and the additional suggestions which follow assume that the athlete has already made himself fit. By this is meant, of course, that his wind is sound and his stamina built up, his muscles supple and freed from all trace of stiffness. It is also assumed that he is indulging in the most useful training asset—sufficient sleep, especially “beauty” sleep—and that he is regulating his diet. This does not imply ascetic abstinence from all good things and tasty dishes, but moderation and a preference for plain rather than

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rich food, fixed meal hours, and strict moderation in the absorption of alcohol. Smoking has been discussed elsewhere : it offers no advantage ! What, then, are the further forms of training to be pursued ?

Essentially, the only additional requirement of a fit man who is in a condition to race is "tuning-up." But the compendious nature of this phrase varies a good deal according to the proficiency of the performer. The veteran will indeed need little more than speeding-up to be in thorough shape ; the novice will have to study style and technique as well. Fortunately this study is by no means uninteresting.

The corner-stone to success in middle-distance running is style. A good style, whether natural or cultivated, results in economy of effort, which is vital in races where every ounce of energy is demanded, and—for the spectator—such grace and beauty that the phrase "the poetry of motion" can be justly applied. The primary object of games is admittedly recreation ; but it is proper to recall that beauty in the display of physical effort has a tonic influence upon the mind, as the ancient Greeks realised.

Technique, unlike style, is rarely natural. Starting, speed at the start and finish of races, knowledge of pace and tactics are acquired by practice and experience. The part they play in successful middle-distance running is of an importance second only to that of good style ; and, indeed, it does happen that faulty stylists succeed in spite of themselves, but poor tacticians never.

Good style has been said to induce economy of effort. Why is this so necessary in middle-distance races ? It is evident that once the sprint races are left behind, in which the whole effort is sustained at practically a maximum throughout, there enters into running an element of judgment whereby the amount of energy the athlete possesses shall be so employed that none is wasted and that complete exhaustion does not occur before the finish. Obviously the race will, in most cases, be most

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fatiguing near the close, during the final sprint in fact, therefore everything possible should be done to conserve energy for the ultimate struggle. What measures can be adopted to ensure this ?

In the first place, the novice usually has faults of carriage and action. The head and body should be slightly inclined forward, and it is perhaps curious to note that when the head is properly set the body angle follows almost automatically. It is not difficult to acquire the proper carriage of the head and trunk if the following general rule be observed. The eyes should be fixed on a spot on the track some 10 to 12 yards ahead (often enough, of course, the small of an opponent's back meets the gaze in a race) and the consequent inclination of the head to dip forward, followed in turn by the body, does the rest. It is certainly true that the carriage of the body in a mile is more upright than in a quarter ; but the rule given should be applied to either distance, for the body lean adjusts itself almost automatically in accordance with one's speed.

The reason for this forward lean is, apart from gracefulness, twofold. In the first place it avoids strain—a head flung back tends to tighten the neck and impede the breathing ; secondly, it permits a maximum stride. The more upright the body, the more prancing the stride ; and as running is not to be confused with trotting, a high-stepping action is to be condemned. Within limits to be discussed in a moment the runner should be anxious to keep his stride as long as possible, and whenever the head and trunk are upright or flung back several inches are clipped off each stride, as can be observed at any sports meeting. Particularly does this tendency creep in towards the end of a race, when through fatigue the natural impulse is to set the teeth, fling up the head, and struggle. Only stern discipline can overcome this habit ; but the advantage gained by a man who can finish in good form is remarkable. It is erroneous to suppose that clenched fists beating the air

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and head held proudly high, every ounce of energy being expended, are the proper method of sprinting for the tape. Not only is the stride shortened and the breathing impeded, but in a very tight finish the man who is leaning forward will get the verdict, for his trunk crosses the line first !

Faulty arm or leg action spoils many a style otherwise promising. No one should use his arms as if he were climbing a rope, nor swing them as if holding a racket. The ideal arm action aims at elimination of effort during those parts of the race where one is coasting or striding, and at assistance when sprinting. During the middle portion of a race—and every middle-distance race except the pillar-to-post quarter is in three sections, fast start, striding, sprint finish—the arms should swing perfectly easily at the side, only slightly more than in walking. The swing should be straight forward and back, *not* across the body. This cross-swing is pernicious when striding, however advantageous it may be to the pure sprinter, for it throws the body too far forward (almost as bad as too far back), and being less natural tends to exaggerate the arm movement. The arms should be slightly bent, elbows in to the side, and hands not clenched. Corks seem superfluous. It is quite astonishing to find how much energy is saved by not working the arms violently until the absolutely essential moment—the sprint home—when the strength conserved in the shoulders can be liberated to assist the quickened leg movement.

Of course during the initial sprint from the holes, and at the finish, the arm action becomes that of a sprinter. As has been indicated in the chapter devoted to that topic, there exist two schools of thought on sprinting arm-action—the Mussabini, across the body, and the American, straight through. To suggest which is the better would come ungraciously from a middle-distance runner ; but in recommending an action for adoption by middle-distance runners the writers are forced to

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differentiate. And it is pretty evident that opinion favours the American piston action for middle-distance running, provided the head and body are kept properly controlled. The writers have no hesitation in advocating this straight-through drive, which is a quickening of the quiet action employed when striding ; but they must admit that the other action may prove more suitable to some athletes, particularly sprint quarter-milers and those who can in no other way keep their body leaning forward at the finish. There is a word of caution to be added : the piston action should not be so exaggerated that the hand rises too high in front or that the elbow swings too high behind.

It is believed that for the 1500 metres and the mile the body carriage and arm action here described are the best ; but it is proper to point out that Nurmi and Larva, winners of the Olympic 1500 metre races at Paris and Amsterdam respectively, employ an action widely different, particularly as regards the arms. The features of their style and its utility are fully discussed in the chapter on long-distance running ; and beyond suggesting that the development of a similar style might prove beneficial, especially to the short-striding and stocky type of miler, it is not thought advisable to recommend it for general cultivation by middle-distance runners.

One secret of success in middle-distance running is perfection of stride. Good leg action is always beautiful and has the merit of being effective. It does not necessarily imply a long stride. The length of stride is dictated by comfort—another test of economy in effort—but it may be possible to increase the stride with practice. It has been explained already how a stride may be spoilt by bad body carriage and that high-stepping is wastage ; but a good knee-lift, followed by a thrust forward, is quite a different matter. It is to this that the expression a “good drive” is applied. Many people lift the leg well but fail to thrust it out. Concentration in practice and a determination with every step

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to put the foot down an extra couple of inches ahead, and an attempt to use ankle flick as the foot comes to the ground, will help. So will gymnastic exercises, *e.g.* high-kicking in true *corps-de-ballet* style, and knee-lifting followed by shooting out the foot. If, however, after proper trial, the lengthened stride produce discomfort, the athlete should revert to his old stride, for discomfort wastes energy and nothing is gained.

Some athletes, and notably the late Hans Braun, are gifted with a remarkable spring off the ground. Possibly this may be cultivated by gymnastics and exercises, and if so it is an invaluable thing to acquire. But care must be taken not to bound too much, as time spent in the air is wasted. Similarly, it is a grave and by no means uncommon fault to drag the back leg. It looks pretty in photographs but is most ineffective in running. More foolish still is a high kick up behind. Often a sign that the athlete is not quite fit, it should be eradicated if it persists throughout his racing. Nurmi's style involves a minimum of back lift and continual creeping forward of the leg : this may not be an ideal because it implies little spring, but the theory is sound.

The other great department of study in middle-distance races is technique. Speed at the start and finish, knowledge of pace and tactics, are very important articles of equipment, and they require somewhat detailed consideration.

It is a truism which is frequently overlooked that the man with superior speed at the finish wins the race. And still more often is it forgotten that anyone aspiring to first-class standard has got to practise sprint starts (*i.e.* from the crouch position) as assiduously as the true sprinter, especially in quarters and halves. If, as is usual, save in very up-to-date stadia, the first corner is close to the start, the sole hope of keeping or gaining the inside berth lies in speed off the mark. Therefore the middle-distance runner is well advised to practise starting and sprinting with the 100 yards men. Many people

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are fearful of this initial rapid start ; but in fact it is not exhausting if not sustained too long, *i.e.* for only 50 yards or so, according to the situation, for it is the proper outlet for that excitement which is bubbling over at the start of a race. Moreover, a quick start allows one to drop down easily into that long, swinging gait which is wanted in the middle of the race.

As for the finish, this is a matter of improving one's sprinting power. No matter how lethargic one may be by nature, it is quite possible to become a passable sprinter by practice. Not only the length but also the rate of a finish can be increased by practising with a sprinting friend, especially an average 220 man. Quite often one will find, when fit, that towards the end of a run through over 200 yards or so one will be going up on him. It is also a useful exercise to put another fellow a few yards up and try to catch him, provided, of course, that he is just a shade slower than oneself. And always, when practising, attention ought to be paid to style—keeping the head down at the finish, even when fatigued, and controlling the arms.

There is one other sprinting trick to accomplish. When about to pass a man, never ask his permission first. Pass him with a rush, without warning, and try to establish a 4 or 5 yards lead before he can counter-challenge. Technically known as “jumping” an opponent, this is an invaluable asset if properly employed ; and no one who saw Bevil Rudd use it can forget the sudden eagle's swoop on to and in this case past his quarry and the almost inevitable failure of his opponent to recover morally or physically the ground thus lost.

It is in middle-distance races that knowledge of pace and tactics is of almost paramount importance. Solon's counsel “Know thyself” can be taken to heart by every athlete ; and such knowledge comes with practice and experience. To know the pace at which the race is being run is invaluable ; ability to apply knowledge of

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oneself renders it possible to lay plans beforehand, even if they "gang agley" and need adjustment.

How is knowledge of pace acquired? In practice by running against a watch, and in races by noting rates of speed as announced by lap times. It is possible to achieve quite uncanny accuracy in judging the time for each lap in the half or one mile, or in guessing the speed of a quarter. With experience indeed such knowledge becomes second nature; but it may be cultivated thus in practice. In training, a friend may hold a watch and time the laps. For the 880, for example, one may first of all attempt to run the first lap in a certain time, say 57 seconds, and see how near to 57 one gets. These times should, of course, be varied for wider experience. Then one can run a first 440 of a half, and a bit over for luck, and guess the time taken, comparing the guess with the time actually recorded. Similar exercises may be carried out in the other distances, *e.g.* the first 300 of a quarter (an excellent training spin, by the way) in about 33 seconds; a 600 in 1.13; or the first half or two-thirds of a mile in, say, 2.10 or 2.55. The advantage of all this practice is heightened if it be remembered that it forms a sound part of one's other training as well.

Not only does one thus gain knowledge of pace; one discovers also the rate which suits one best. Armed with this information, and knowing his sprinting capacity, the athlete can plan his race beforehand and run to some extent independently of his rivals. If he knows much about his opponents, he will appreciate what time he must do in order to win, and should lay a plan of campaign—a very fascinating and useful occupation. Or he will know, during the course of the race, whether the speed is suitable or not, and, if not, whether it is too fast or too slow. If too fast he will realise that he can safely let those setting the pace go away, because they will eventually crack and come back to him, provided, of course, that he maintains his own steady gait; and if too slow, and he doubts the superi-

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ority of his sprint, he will perceive the need to go out and set the pace himself. And, obviously, knowledge of pace is essential in relay racing, where often enough one is running quite by oneself.

As has appeared from the last remarks, tactics are closely bound up with knowledge of pace, in so far as the planning of races is concerned, and the methods of one's opponents affect those plans. The extent to which one can plan a race naturally depends upon how much is known about the other runners. They should always be studied, and in the absence of observation in heats or of first-hand information their record considered. *E.g.* if a runner hitherto a sprinter suddenly takes up quarter-miling, one can expect speed at the start, and if the race be slow, at the finish also. In the absence of any information the only safe plan is to make the race as fast as possible; but this is rarely necessary on this ground alone. To suggest all the alternative situations for which plans might be prepared cannot be attempted here; but such occasions as the opposition of a sprinter and half-miler in a quarter, or two milers, one of whom is the better finisher, afford obvious instances of the need for strategy. In the first instance, the sprinter would like the race to be run slowly in order to reserve his sprint, and the half-miler will naturally make the pace fast to kill off this spurt. In the second case, the slower finisher ought probably to make the third lap a hot one with a similar purpose.

Moreover, when laying plans it is a good thing to have alternatives ready. The other fellow may be as cunning as oneself, and if he tries a move one must be prepared with an answer. Finally, it is worth remembering that once plans are laid, which should be a few days in advance if sufficient information is available, there should be no more worry or thought about them, and certainly no chopping and changing about. If training has been sound worry is needless, and it is always useless.

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Before leaving the topic of tactics, it is proper to repeat four golden rules which always apply and are often broken. They are: (i) Run on the inside; (ii) don't pass on a bend; (iii) keep up with the leaders; (iv) don't relax the effort when going for home.

The reason for the first two rules is mathematical, simply that the outer of two concentric circles has the greater circumference. Yet how often do even seasoned performers run yards wide or pass on bends! Is it not realised that in running only 1 yard wide round the bends of Stamford Bridge track one has to travel $6\frac{1}{4}$ yards farther every lap? Of course, in a 440 run in lanes these two rules do not apply, and most other rules of tactics are redundant. But as it is only on the Continent and in the Olympic Games that lanes are used, the importance of tactics in most of the 440's which will be run by readers of this book is evident, and particularly these two rules. As a slight exception to the first, there is this fact: that when the track near the pole is badly cut up it pays, particularly in halves and miles, to run 2 or 3 feet wide on the firmer surface down the straights, and even, under exceptionally bad conditions, round the bends as well, provided no one is thus afforded an opportunity to cut through on the inside.

Keeping up with the leaders is a very sound rule which should be relaxed on two occasions only. If it so happens that the pace is impossibly fast, one can afford to let the other fellow go, knowing that he will come back. As already said, it is here that a knowledge of pace is valuable. Even in such a case it is essential to keep a shrewd eye on the leader; he may prove to be a dark horse who will refuse to be caught and just stagger home, or even someone good enough to do the seemingly impossible, and after, say, a 52 first quarter, finish a half in 1.52. If in any doubt, it is wiser to run no risk but attempt to follow; the odds are that one will be in no worse state than the others when the time comes to sprint home. The other occasion is when one

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has to act as leader oneself, and is, of course, no real exception at all. It requires courage and self-confidence and very sound judgment ; but if properly done it wins more races, especially quarters, than might be expected, considering the extra fatigue which usually accompanies pace-making.

It may seem obvious to insist on maintaining the final effort until and beyond the tape ; but it is not superfluous to reiterate the warning, for only a few years ago a British mile championship was lost through a leader's failure to observe the rule. It is extremely tempting when one has a lead in the straight and is feeling done to take a breather, but once the final effort is slackened nothing on earth will enable a fatigued man to get up on his toes and sprint again. It is of almost equal importance to run right through the tape. In a close finish the man coming up from behind may just shoot in ahead if the leader eases as he senses the tape. To run to a point several yards beyond the post means safety ; and, of course, to pull up with any jerk is very bad running and harmful to the muscles.

There remain a few things to add before discussing each event in detail. In training of all kinds it is never wise to do too much. This point has been insisted upon earlier in this book, but it deserves repetition. The object of training is not to break records or to exhaust oneself, but to improve style and technique and to store up energy for the race. For this reason it is an excellent thing, once stamina is assured, to practise over distances shorter than the race. There is no question about being able to stay the course in races—excitement and fitness will always carry one home. Therefore a quarter-miler will benefit if he goes 300 yards ; a half-miler, 440 or 600 ; a miler, half or two-thirds of a mile. And one should avoid running oneself out in practice—that is not the aim of training. If possible one should seek final polish and have “all-out” runs in actual races ; and if things can be so arranged, it is a sound plan to scheme

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a series of graded races which will gradually bring one on week by week to faster times. That this is feasible, at any rate for the ambitious athlete, is demonstrated by the season's programme. About the beginning of June occur the county championships, which, in the half-mile, for example, call for about 2.2 from the winner. A fortnight later the district championships demand about 1.58; and then the open championships normally about 1.55. This can be supplemented, of course, with handicaps, open scratch races and relay races, which should be selected to fit in with the plan of ever-increasing speed over the distance chosen.

The length of time required for special training, once the runner is fit, is, as a minimum, about two or three weeks, provided the system of graded races advocated above be practicable. Naturally, longer time is required to study technique. The frequency of training depends largely on the individual—how much he does at a time, how much technique he has to acquire, and whether he plays other games which can supplement his training and, incidentally, help to keep him from staleness. But three times a week at the most should suffice; and when racing begins and one is fit, only one run a week besides the Saturday race is necessary or, indeed, wise, else there is a risk of staleness. Slight undertraining is better than too much, which nauseates.

Should it happen that the athlete is anxious to attempt two or more middle-distance events, the first advice is that of *Punch*—"Don't." Undoubtedly the ideal is one man, one event; and this is quite sufficient exercise if there are heats on the same day. The man who tackles frequent doubles is apt to "burn out" before his time. If, however, one is really keen to attempt two events, the only safe method is to make the first the main objective and let the second take care of itself. Otherwise one will probably fall between two stools. As for training, once fit one ought to train for the shorter distance, concentrating on speed every time. After all,

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stamina will carry one home in the longer event, but no amount of cultivated staying power will knock fifths off one's sprinting time. Incidentally, the 100 yards man who tries quarters will usually take the edge off his sprinting; but the 220 man may more happily combine the quarter. Similarly, the 440 and 880, or the half and the one mile may go together; but in every case the events must be kindred, and safety and comfort lie in one event at a time.

Section 2.—The Quarter-mile

It has been suggested in the previous section that quarter-milers are of two types—sprinters or middle-distance runners. Quite evidently the training required by each type will be different. The pure sprinter, when he tries running the 440, will probably regard it as a mighty long way; and unless he is a phenomenal runner like Liddell, he will be obliged to employ methods hitherto alien to him. It will be suicidal to attempt to go at top speed the whole way, and he will have to learn to stride in the middle section of the race. Probably, too, he will find his stamina requires strengthening, even though he be an excellent 220 runner. His special training, therefore, should be directed towards increasing stamina so that the distance no longer seems frightfully far, and to running at three-quarter speed for the first 300 yards or so and then being able to call up his sprint.

For this type of runner nothing is more valuable than running an occasional 600 yards early in the season. It will inevitably take the edge off his sprinting, but, as was pointed out in the last section, every 100 yards runner must expect this if he tackles the 440; and most of its keenness will be restored by the later training over short distances. Fatiguing at first, the result of these runs will be to strengthen the muscles of the thigh and improve the wind—for the breathing processes in middle-distance races are not quite the same as in

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sprinting, being much deeper and less jerky and gasping—and, consequently, make the quarter-mile distance seem relatively short and easy to negotiate.

To get the proper stride during the middle portion of the race the best distance to run is 300 yards, usually against the watch to ensure that no loitering occurs. It is always helpful to have a companion; but this distance in particular can be run alone with benefit, just because one is often obliged when racing to set one's own pace, either because tactics demand it or because one is running in lanes. The way to run such a 300 is exactly as if the intention were to go the full 440; therefore the start must be as fast and the action from the crouch position the same as in a 100 yards. In a 49-second quarter the first 100 yards should be covered in $10\frac{1}{4}$, followed by a long stride through, with a minimum of arm action (naturally more, however, than in a half-mile); the second 100 yards should take $11\frac{1}{5}$, and the third, $11\frac{2}{5}$; total $33\frac{3}{5}$. These times to be increased proportionately, of course, according to the standard aimed at.

The other type of quarter-miler—the half-mile type—will lack not stamina but speed. His special training must be directed towards remedying this. Runs over 300 yards such as outlined above will be of exceeding utility to him, although at first they will seem impossibly fast. He will probably have to begin lower in the scale with, say, 35 seconds for the 300, and try to work up to the $33\frac{3}{5}$. Another point for him to study will be starting (of value also in his half-miles) and sprinting. As already suggested, he should train partly with sprinter friends, and when possible run in handicaps or even scratch events at any sprint distance. He may also find finishing a weakness—he will not suffer from fatigue as may the pure sprinter, but will just lack the extra bit of speed.

Neither type of runner need run through the full distance very often in training if he is able to obtain

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plenty of racing experience, which, as already suggested, is a considerably more valuable method of training. If this should be lacking, the sprinter will have the greater need to practise over the full course ; but once a week should suffice. Either runner will find it helpful to have a friend to take him along over the last 150 yards, especially if that friend knows better than to race ahead.

The tactics governing middle-distance races have already been discussed, but a few particular points which arise in 440's may still be mentioned. When the race is run in lanes (*e.g.* the Olympic Games and international matches abroad) each competitor runs exactly the same distance and has to run his own race without, as a rule, having much idea of the position of his rivals until entering the straight, for the start is in echelon. An acute sense of pace and a careful study of the ability of his opponents are called for, but of strategy very little. In heats, for example, if no adversary can beat, say, 51, one can run fast enough to finish just within that time and not bother about the eccentricities of anyone who goes off unduly fast. In the final, of course, one is out just to do his best, and unless competing in another event there is no necessity to save energy.

The growing tendency is to run all quarter-mile races in lanes ; and in view of the abuses possible when all start from the same mark over the same course, and of the extraordinary advantages which the luck of the draw for station may confer in a field of no more than four runners, the result is certainly more equitable although the interest is reduced. When the race is not run in lanes, as is usually the case in England owing to the difficulty of preparing lanes on the majority of tracks, and in America, where there is generally an initial 220 straightaway and only one bend, the importance of tactics is supreme, probably even more than in the half-mile, where there does exist some opportunity to recover from an error of judgment. It is for this reason that one is tempted to regret the necessity, at all events when the

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first corner lies within 50 yards of the start, of using lanes in order to ensure a fairer race. The event tends to become mechanical and the human interest is greatly reduced ; indeed the fundamental element of racing, whereby men run together from a mark, is eliminated. It seems a pity that the race cannot always be run as in America, with the long initial straight, which affords ample occasion for each man to get the pole before the corner, without the serious likelihood of illegal tactics being employed ; but the quarter-miler of the future will apparently need to practise more and more running his race in lanes.

However, the race without lanes being *de rigueur* in England it is necessary as well as interesting to consider the tactics demanded in its performance.

For the simple reason that running on the outside round a bend adds yards to the total distance covered it is wise to run on the inside if possible. If one has the luck to draw inside station nothing should be allowed to deprive one of it before the first corner ; and if one has practised starting and sprinting, no one save an exceptional sprinter ought to succeed in covering 2 yards more than oneself in the first forty or fifty. These 2 yards approximately represent the clear lead which one runner must have before crossing in front of another. Naturally enough, those who draw less favourable stations will make efforts, if they think themselves fast enough, to obtain the inside berth at the bend, and they must be careful to avoid jostling or obstructing others. Successful efforts will often be impossible, however, if one is drawn outside, *e.g.* No. 4 ; and the alternatives are either to run wide round the first bend and thereby go perhaps 3 or 4 yards farther, or to go slow at the start and drop in behind, which also probably costs four yards. Which is the lesser evil depends on the opposition. If one is certain that everyone will go hammer and tongs round the first corner and down the back straight, it is wiser to drop behind and reserve one's

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fire for the finish. If, on the contrary, there is likely to be a slowing up round the corner, there is every chance that running wide but slightly faster will put one level with the leaders at the entry to the back straight, when a sudden "jump" should land one in front.

- Assuming, however, that the inside and leading berth at the bend has been secured, what is to be done? Leadership in quarter-miles pays nine times out of ten, for it imports control of the race, especially if the curves are long; therefore it is worth retaining. As leader, if one is a half-mile type of quarter-miler running against sprinters, he should get on with it, and try, by keeping the pace warm, to kill off his opponents' finishing spurt. On the contrary, a sprinter, if leading, wants to keep the *tempo* slow: let him play his men round the corners, even to inducing them to try to pass, then in the back straight just keep them from passing, which his superior speed should render simple, and round the last bend play them again. The finish should be easy, especially if the final sprint be begun about 5 yards before the end of the curve, so that the man behind does not have a chance to draw level before the commencement of the straight.

How may the half-miling type circumvent such tactics? The only way, if he cannot get by down the back straight, is to push the sprinter along as hard as possible all the way, and hope that thereby he may be made to crack. A pure sprinter, especially if not perfectly trained, often will.

It is always sound tactics to have the lead at the last bend, unless the finishing straight is exceptionally long. No one can pass before the straight without running wide, when he can be played; and it is possible, if one is careful, to take a slight breather before the final spurt, which should begin with a "jump," as previously described, about 5 or 7 yards before the straight is entered. The temptation to swing wide when entering the straight must be guarded against. Hug the pole,

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for it is the shortest route to the tape, as another man may prove to one's cost by coming up on the inside if one runs at a tangent. And never relax the final effort until beyond the judges' stand.

The remarks just written about the 440 apply in large measure to the 600. Many people indeed would attempt to run the 600 as an abbreviated half-mile, probably because most races at the distance are tackled by half-milers, and also because, although it is occasionally possible to run the quarter as a sprint, no human being could so run this distance. Nevertheless, the sounder theory is to run it as an elongated quarter, with the fast start in order to get the inside berth, and then the raking quarter-mile stride until the last 150 yards or so, when the final effort should be made. Just as in quarter-miling, the faster runner can try to play his man on the corners and the slower can try to hurry along a man who is slowing up the pace. The most subtle danger against which to guard is that of running the first 440 yards too fast, if one is a quarter-miler, or too slowly, if a half-miler. To do 1·10 the first 440 should take, approximately, 50½ seconds; 1·12, 52; 1·15, 54; for the last 160 yards will invariably take about 20 seconds.

Section 3.—The Half-mile

The half-mile shares with the quarter-mile the distinction of being the most exhausting race to run, not because longer races are not exhausting, but on account of its affording no real relief from top-speed running at any stage, at all events in first-class races. There is no lull in the race similar to that which occurs in the third lap of almost every mile. Moreover, it is probably true to say that the half-mile is the most taxing of all, because it consists in two consecutive fast quarters. Whether this be quite true or not, certain it is that the training needs to be carefully planned and carried out,

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and style and technique finely developed, in order to ensure success.

A good style, as already described, is of the greatest value. Perfect technique is almost a *sine qua non*. Without a thoroughly sound knowledge of pace success is unlikely ; and to the possession of such knowledge must be added a flair for tactics based on common sense, experience, and appreciation of one's opponents' worth.

For the methods of acquiring and applying pace knowledge the reader is referred back to the previous section in this chapter dealing with general principles. It is essential in order to plan a race to know one's maximum speed, and to know what speed will be most advantageous in the particular event. Further, it is necessary to be able to judge quickly during the progress of the race whether the pace set is satisfactory or whether it is too fast or too slow.

Pace in half-miling is measured by the time taken for each lap, which is usually a quarter-mile, and it is interesting to analyse the variations in times in different races. The first curious fact which emerges is that among good performers the time taken over the second 440 yards is almost constant, whatever the time over the first 440 may have been. Thus the average time for the second 440 in a 1.57 half or a 2 minutes half is 60 seconds, and only in the case of exceptional runners capable of remarkable times is it likely that whether the first 440 take 57 or 62 seconds the second will differ appreciably from a constant 60 seconds. It is therefore evident that most people gain nothing whatever from a slowly run first quarter.

The superlative runner can, however, play havoc with these figures. Given a very slow first quarter (say 65) he may reel off 57 or even 55 for the second, if pressed (e.g. A.A.A. Championships, 1928, when a 60½ first quarter meant that the winner did about 55½ for the second). And if the first 440 take 56 or 57 he may still reel off 57, but probably not 55. Indeed, 57, instead

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of the lesser luminary's 60, is approximately his constant for the second quarter, for even after a 55 first quarter he can produce this time. (In Dr. Peltzer's record half-mile the first 440 took $54\frac{3}{8}$, he lying second, and the second 440, 57.) So in this class also, no advantage accrues if the pace is too slow.

On the other hand, there does arrive a stage at which the pace may be too hot. It becomes economically unsound. The good athlete instanced above would exceed his 60 seconds pretty considerably if he were asked to turn out 55 for the first quarter; and the exceptional athlete's 57 constant would increase perhaps to 59 or 60 seconds if the first 440 were reduced to 52 (cf. *e.g.* Meredith's old Olympic record of $1.51\frac{9}{10}$ made after a $52\frac{1}{2}$ first 400 metres).

From these figures it can, therefore, be deduced that the time for the first quarter is all-important, for the second is a constant varying only with the class of the performer. Further, the faster the time for the first quarter the better, until the economic limit is reached, after which the time for the second quarter begins to soar. And the time for the first quarter should be anything up to three seconds faster than that for the second. Finally, despite the economic weakness of a race in which the first quarter is run too quickly, it may (*a*) not result in a total time slower than in a race wherein it was too slow (*e.g.* $53+60=1.53$; $55+56\frac{3}{8}=1.51\frac{3}{8}$; $61+55\frac{5}{8}=1.56\frac{5}{8}$), or (*b*) prove very sound tactics if it be more injurious to one's opponents than to oneself.

It is extremely doubtful whether the attempt to run two consecutive quarters in the same time can ever be more successful than the hitherto satisfactory method of making the first some two or three seconds faster than the second. In the writers' opinion, the pace must come in the first half of the race while the runner is fresh: it is expecting the impossible to ask him to recapture the lost seconds in lap two, when he is fatigued. In other words, 54+56 is more certain than 55+55, which

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would probably turn out to be, at the best, 55+56, and never 56+55.

Knowing, therefore, that his time depends upon his speed over the first quarter, and knowing the fastest rate at which he can go and still achieve his constant time for the second quarter, the half-miler has to decide what speed will best suit him in the actual race. (Of course, in a relay he would go all-out at his best rate for the first 440, or a shade faster if consolidating a lead.) Obviously, if his chief rival can outsprint him, as, for example, the quarter-mile type would against the half-cum-mile type, the slower finisher cannot afford to dally. He must secure the fastest possible pace in the hope of quenching that sprint, and if no one else will do it, he must set the pace himself. And this in spite of the danger of leading in a half-mile. He may even find it advisable to run the first quarter a trifle too fast, if he can induce his rival to hang on, and if he feels confident that it will injure that rival more than himself. The fast finisher can, of course, afford to laugh at a slow first lap; indeed he usually prefers it. But even he must look out lest the very slowness of it tire him, as it will do if he is obliged to clip his stride.

The danger of leading has been mentioned. The danger actually is this, that to lead is for some reason, largely mental, more fatiguing than to follow, quite apart, of course, from such an obvious disadvantage as facing the wind. Undoubtedly the second, or, if unattainable, the third position, is the best in half and one miling, unless perchance the pace set is too hot to last and one can safely stay behind. In this position one can virtually control the race, which is eminently proper as one is presumably running to win it. If the pace is too slow—and it is curious to observe how it tends to flag after about 350 yards—one can often whip it up again by moving up to the leader's shoulder. One has his finger on the movements of three if not four runners, for often there is someone at one's elbow. When the time comes

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to go for home one can strike unhampered by having to pass several others, only one man being ahead, and he usually tired and not fit to resist a good challenge. The only thing for which to look out carefully is lest one should get boxed in—a fate far less likely when running second than third or later. Should this fate be imminent, get out of the danger zone at once, even by taking the lead. If it occurs early in the race one can always slow down again until one, and only one, other man has got jumpy and taken the lead again. And observe that if one trails in the last position, one may be 8 or 10 yards behind the leader, a tremendous lot of ground to regain in the last 200.

The tendency to slacken the pace towards the end of the first quarter has been described. It is here that the class man can stand out. If he cannot make the leader maintain the gait it will usually repay him if he goes out himself. Otherwise he will have his stride clipped, which is tiring and wasteful. Most men are feeling the effects of the long stride at this stage, and knowing that the relief which a change of action will bring when they sprint is still a couple of hundred yards ahead, they almost unconsciously slacken. The good man can run them to something approaching a standstill here and save seconds of time. Indeed, if he can stride from the 550 yards mark at pure quarter-mile speed and save his final effort for the last 100 yards, he will tax the ability of any opponent to the limit and have a well-nigh irresistible finish. This method is certainly to be recommended after a fast-run first quarter.

Probably the most perplexing decision called for in half-miling is at what moment to sprint. Practice will have informed the runner how far he can sprint—and, incidentally, good training will enable him to increase the distance—but three considerations may be borne in mind. First, one can always manage an extra 40 or 50 yards sprint in a race on stamina and excitement alone. Secondly, the change of action from the tiring

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stride to the more choppy sprint style is a great mental and physical relief. Thirdly, it may pay to make the effort perhaps 20 yards earlier if it prove unexpected. That invaluable 4 or 5 yards lead is then more likely to be gained ; and it is possible that either one's rivals will argue that as the effort is being made unusually soon they can wait, because the inspiration surely cannot last, or else they will be too fearful of their own ability to sprint from such a point and will not endeavour to follow.

Needless to say, perhaps, the last two arguments are wrong ; and with regard to the lead, any wise runner will counter-challenge immediately and try to prevent the gain of those precious yards. It is a pretty safe rule not to allow anyone to pass in the back straight (where most people try, by the way) and to fight for the lead round the last bend (*vide* remarks on quarter-miling), which is worth about 2 yards in the finishing straight ; and it is a tremendous risk to allow someone to go by, say, 300 yards from home and depend upon a pious but by no means justifiable hope that fate will check his headlong career long before the post. Let him be accompanied if his taking the lead cannot be prevented, for although the distance be greater than one ever dared hope to be strong enough to sprint, depend upon it, the other fellow will grow just as tired, and possibly more tired, before the finish.

Section 4.—The 1500 Metres and the Mile

These two events can be considered together, for their length differs by only 120 yards, a distance appreciable to the tired athlete but not calling for any real differentiation in training or tactics. The only distinction is that the 1500 metres slightly favours the half-miler ; the mile, the pure stayer who may combine this race with longer distances.

Treated as a distinct event, trained for apart from the

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half-mile, with which it is often combined, the chief requisites for success in the mile are stamina, speed and knowledge of pace. Until recently, even in first-class company, speed was by no means essential; but with the development of half-miling has come a quickening of the mile, and it is no longer so possible for the plugging type of miler to meet with success against good performers who possess strong finishes. It is, of course, true that a strong finish may be mitigated by a cracking pace in the third lap, so that everyone enters on the last in a state of fatigue; and such are the obvious tactics to be adopted by a miler not gifted with speed over the last quarter. Provided, however, that the half-mile type of miler (who is the predominantly successful type in modern first-class competition) has a reasonable amount of stamina, he will be able to cope with such a situation, and, furthermore, by running the first half-mile fast (*i.e.* about 2·6 or 2·8) he will probably turn the tables on his slower rival and either leave or crack him.

The mile cannot be regarded as a stereotyped race with a regular pace throughout. That method may sound admirable in theory, but it fails in practice. Modern conditions in, say, a 4·20 mile usually call for a 60 first quarter, 2·7 half and 3·17 three-quarters; and even in those cases where attempts have been made to run four more or less equally rapid quarters, the result has been to establish that the first is always the fastest, and the last the next rapid, the second and third being several seconds slower.

It is quite possible that the somewhat remarkably fast first quarter just quoted is not quite sound economically; nevertheless it does serve to get the runner well into his stride, gets him clear of the field if, as often happens in this event, the entry is large, and, of course, properly uses up his pent-up nervous excitement, besides being excellent tactics against timid or inexperienced rivals. The disadvantage is that the third lap has usually to be taken rather slowly; and a very confident runner who

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knew his pace to a second might, if the field were not so large as to hamper him, be able to run 63, 66, 67, and be up with the leaders before the last quarter. But he would, of course, run the risk attendant upon not keeping up with the leaders, namely that they might prove to be dark horses who refused to be pegged back.

In the early stages of training for the mile, it is upon stamina that one should concentrate. This can be gained by running at medium pace over distances exceeding a mile, and by sharp walks of 6 or 8 miles on the days when the track is not visited. The stiffness or shin soreness which may accompany fast walking can be avoided if the walk be interspersed with a short trot on the toes every couple of miles. Walking then becomes a very valuable training exercise.

Once stamina is assured, the miler wants to acquire speed. Initial speed from the mark is not so important as in the other middle-distance events, although a good position on the inside early in the race should always be obtained. A half-miler will usually possess sufficient speed already, or will be training for the half and so acquire it; but the slower type of runner, especially if he be a cross-country or long-distance man, will need to practise both sprinting and sustained last efforts. Sprinting practice and entry in a few sprint handicaps will assist the one; running occasional quarters and halves, the other. The later stages of training should be devoted to speed work, and to half and three-quarter miles at top speed. Alternately, these halves and three-quarters should be run with the object of improving pace knowledge—then the plan should be to cover the 880 in, say, 2·8 (as in a proper mile race) and the three-quarter mile in 3·16, capping either with a brief spurt.

Most mile races reveal a slowness in the third lap, caused partly by fatigue, partly by preparation for a spurt, and partly by the fact that everyone is watching his rivals. The third lap is, in fact, the critical stage of the race, and the opportunity for the strategist to score.

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The fast finisher can afford and usually desires a *rallentando* here ; the plugger, or inferior sprinter, if confident that he can stay the course, must make an attempt either to draw away from the others and so establish a winning lead, or make the pace so hot that in following him the others are exhausted and consequently lose the power to outsprint him.

If there is no information available about one's opponents, the safe plan is to study them as much as possible during the race, particularly the third lap, when signs of fatigue and anxiety become evident. Careful observation, which becomes acute with experience, will tell one the right moment to strike. If instead of trying to draw away in the third lap it seems wiser to postpone spurting until the last, the best place is about 250 yards from the tape, when tactics similar to those prescribed for the half-mile should be employed. "Jump" the opposition ; get or keep the lead at the last corner ; never relax. And always try to maintain form.

CHAPTER VIII

DISTANCE RACES

Section 1.—Long-distance Running

THE events classified under the heading Long-distance Running may be said to embrace any distance over 1 mile. It has already been suggested that the mile race should fall properly within the middle-distance category ; and although many great runners in the past have succeeded in combining it with the 4 and even the 10-mile races, it is unquestionable that the true long-distance runner, unless he possess the superlative capacity of a Nurmi, is not a first-class miler.

Giants such as W. G. George and W. Snook in the 'eighties, and A. Shrubbs in the early years of this century, succeeded in annexing the A.A.A. One Mile Championship in addition to the 4 and 10 miles, and George even added the half-mile to his amazing list of triumphs. But it is submitted that these men are, like Nurmi, exceptions, and a careful consideration of the records and of individuals indicates that the modern tendency is for the great miler to be of the half-mile type, whereas the long-distance runner is of that other type which emphasises style and stamina rather than style and speed.

The point may be further stressed by observation of the temperament and physique of the long-distance runner. It is generally agreed that athletes of volatile disposition are more prone to choose the sprint events ; that the sprinter and the middle-distance runner rely to a great extent upon nervous energy ; and that the quick-thinking man finds the greatest scope for his talent

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in middle-distance events. The more equable, less vivacious and imaginative, but possibly more dogged athlete finds the slower pace and relative monotony of long-distance races better suited to his taste. This is casting no reflection upon any type of runner : *chacun à son goût et à son humeur*. Physiologically also one finds ground for concluding that this classification is sound. If one possessed accurate skeletal measurements of the several types of runners it would almost certainly be demonstrable that the average physical dimensions of the 4 and 10-miler are considerably less than those of the average miler, which approximate closely to those of the half-miler. With rare exceptions the crack performers of yesterday and to-day over the longer distances have been men of small stature, short-striding, wiry and very determined. It is obvious that such physical attributes would militate in all save the rarest of cases against first-class performances in the mile, wherein the advantage of a long stride and the necessity for speed have been explained. On the other hand, it is almost inevitable that the tall, long-striding miler would find himself early exhausted in a longer race through excessive weight and the strain of a great and probably bounding stride. One may group as standard long-distance events races from 2 miles up to 10, pointing out that the best performers can compete with success in any of them ; and one may add that the further category, which includes the Marathon and even greater distances, is within the compass, subject to proper training, of almost any good 10-miler.

The 2-mile race is a regular event in the American Inter-Collegiate and the indoor championships ; but in Great Britain the 3-mile race is more popular, being the standard distance at the Universities and featuring in many club programmes. This event corresponds closely with the 5000 metres (3 miles 188 yards), which is the customary event upon the Continent and in the Olympic Games ; and it is largely sentiment which retains the

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4-mile event in the A.A.A. championship programme, where it has featured for sixty years. In 1925 the Americans, seeking to bring their championships into closer relation with those of the Olympic Games, substituted for their long-standing 5-mile event a 6-mile race, or 376 yards less than the 10,000 metres, which is the Olympic and Continental standard distance. In both Britain and America there is a 10-mile championship, and since 1925 the A.A.U. have held a 15-mile event as well. In both countries there are several annual Marathon races.

Contests over exceptional distances, such as 50 or 100 miles, time races of one or more hours' duration, and the old "go-as-you-please" for several days, have largely died out. In 1928 the remarkable South African runner, Arthur Newton, attempted to break a record in running from Bath to London, a distance of over 100 miles; and the novelty of such an event aroused much enthusiasm. With all respect, however, to a great natural runner, it must be said that the attempt was chiefly of interest as demonstrating the importance of running long-distance races to schedule—a matter to be discussed later—and, as in the case of cross-Channel swimming, it is permissible to doubt the utility of such endurance tests and certainly to deprecate their regular practice.

With long-distance running one leaves the sphere where speed and stride are vital and arrives at a point where style and judgment are of paramount importance. It has been laid down that good style is of primary significance in middle-distance running; and for an exactly similar reason, namely economy of effort or conservation of energy, is it essential to success over longer distances. There exists this distinction, however, that whereas a middle-distance runner may achieve considerable success in spite of his style, no long-distance performer can hope to do so. The long-distance runner is confronted with an event involving a

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long sustained effort ; any squandering of energy must prove fatal. What perfection of style must he seek in order to maintain his necessarily unflagging pace ?

It may be broadly stated that two different styles are in favour at the present time. Each aims at the elimination of wasteful movements ; each affords a good body carriage, a reasonably long stride, an easy arm action and an appearance of simplicity. The one is practised by Anglo-Saxons, the other by Finns.

The Anglo-Saxon method follows closely the lines laid down in the chapter devoted to middle-distance running, where the style and action during the central section of a race are described. The distance runner should not be anxious to achieve a long or bounding stride because of the fatigue involved, although W. G. George, by training himself to withstand such fatigue, was able to employ a raking stride with devastating effect. An easy arm action and body carriage similar to those of the miler may certainly be cultivated. The body will naturally be more upright on account of the slower pace and shorter stride, until in the case of the 10-miler the runner is almost vertical ; and the angle of the head will correspond with that of the body. The arms should be carried low, swinging if anything slightly across the body, almost in the style of the normal walking action ; but many runners carry their arms higher than this—in approximation, in fact, to the Finnish style. It is probably a matter of taste—the point to observe being not to use the arms for purposes of propulsion until sprinting. The whole movement should be smooth and comfortable ; anything jerky should at once be eliminated, whether in the stride, arm action, or even head wobble. Truly rhythmic movement will carry a runner along even after physical exhaustion has set in ; it has the dual merit of being graceful and efficient.

Nurmi has given it as his opinion that the English middle-distance style is ideal for its purpose. Quite evidently he does not approve of it for long distances ;

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and his own successes and those of so many of his countrymen who have obviously modelled their style on his lead one to inquire whether the secret of those successes does not lie in his peculiar style.

With Nurmi, and, indeed, all the Finns except Ritola, the body is carried almost vertical in every race from a mile upwards. The leg action is remarkable for the absence of back-lift—always a wasteful though elegant movement—a considerable forward thrust, and a good but not extravagant knee-lift. The arms appear even more curious. Held almost horizontal, with the hands close up against the chest, elbows pointing outwards and shoulders braced back, they move no more than is required to balance the body until the moment arrives for an accelerated effort. It is at this stage that the English style seems to possess superiority. No man holding his arms as do the Finns can sprint: the best he can do is to quicken his ordinary stride. This is, in fact, what Nurmi does. Instead of chopping down his stride and employing something akin to a sprinter's action—as exponents of the English style given above are recommended to do—he simply accelerates with the same action. Quite obviously this would not be effective against anyone possessing a really good finish: it explains Dr. Peltzer's victory in 1926, when he beat Nurmi in the last 100 yards and set up the present world's record for 1500 metres. It also accounts for the inability of Nurmi or any other Finn at the moment to run a first-class half-mile; but it does seem to enable him to run any exponent of the English style, excluding Ritola, off his legs during the course of a long-distance race, and render any particularly fast finish unnecessary.

The explanation may lie in the extreme freedom of movement; in the "floating" sensation imparted to the runner; above all, in the expansion of the chest and lungs and consequent opportunity for deep breathing. In this connection the extraordinary costal development of the Finns is to be observed.

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Were it not for the style adopted by two other very fine distance runners one would be tempted to recommend the Finnish method to aspirants to success in long-distance races. One must point out, however, that Willie Ritola, a Finn who has practised most of his running in America, employs the longer stride and low swinging arm action characterised as Anglo-Saxon; and had it not been for Nurmi, who usually just beats him, Ritola would have been hailed as the greatest distance runner of all time. Edwin Wide, of Sweden, beat Nurmi over 1500 metres when Peltzer set up the record, and also holds the world's record for 2 miles, again beating Nurmi, and he employs the same style as Ritola. Indeed, one may say that his style appears to be flawless.

It is apparent, therefore, that the Finns' style is not the sole explanation of their present superiority; its efficiency is, however, so great that its cultivation might prove a very profitable experiment on the part of the young distance runner.

In claiming fundamental importance for good style it has been assumed that the athlete possesses stamina. Obviously this is essential to success. Its development calls for very definite systems of training, worked out according to the vocation, physique and temperament of the individual; and it is proper to write a few words on this point.

A great proportion of distance runners perform, often with brilliant results, across country during the winter; and there can be no doubt that this is the finest preparation obtainable. It is, perhaps, debatable whether the crack track runner should indulge in a severe cross-country season, partly because it involves almost continuous running throughout the year, at least for the 4-miler (the A.A.A. Ten Miles Championship is usually held early in the summer), and partly because of the strenuous nature of cross-country championships; and the casting vote must be given by the athlete himself (or his trainer)

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after careful study of his physique. Certainly for the 2, 3 and 4-mile races a cross-country season of three months should be adequate to lay a good foundation for the track work, particularly if the runs are varied with long walks.

The value of walking at this and subsequent stages of training cannot be over-estimated. It is a great aid to the development of stamina, and provided the rate be not excessive—4 to 5 miles per hour is a healthy speed—no shin or foot soreness or other ailment should ensue. A warm bath will remove any tendency to stiffness; but an even more efficacious remedy is the interspersing of short runs every couple of miles. They keep the muscles supple and afford variety to the work. Turf is preferable to the road; and golf is a good game if played quickly, for it helps to relieve the monotony which induces staleness.

The work on the track should occupy about a couple of months; but here again the individual must be the arbiter. The athlete who has lain fallow during the winter will obviously require longer; the cross-country runner will probably be ready to race within a month. The track work should not be overdone: its relative monotony should be broken by walks or runs on the road. Other games, such as fives, tennis or squash, may also be indulged in with advantage. Once the muscles and wind are in good condition concentration should be bent on speed. There is an old adage, "It's not the distance but the pace that kills," and the 3 or 4-miler should train over $1\frac{1}{2}$, 2 or $2\frac{1}{2}$ miles, mixing his work by doing fast miles or even half-miles on other days. These shorter runs should be concluded with a burst of 50 yards or more, the distance being increased each time. As for the 10-miler, he will require an occasional longer run of 6 or 7 miles, with perhaps one full course trial; but in every case exhaustion should be avoided. It is folly to go frequently over the full course except in competition, and the aim should be to participate in

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paces of gradually increasing severity, in one of which will be experienced that gruelling and exhaustion which is admittedly the inevitable preliminary to absolute fitness.

In developing the stride, over-striding must be avoided at all costs. It is fatal on account of the fatigue it induces. The runner should endeavour to cultivate his normal stride, eliminating back-lift or drag as much as possible and trying to obtain a good thrust forward.

As the result of some extremely interesting scientific researches into the consumption of oxygen during violent exercise, tests being performed upon first-class athletes during training, Professor A. V. Hill has come to the definite conclusion that in running any distance an approximately even pace throughout induces the most economical result. Although this scientific conclusion is sound theoretically, the generality of experience is opposed to its practicality in middle-distance races, in which tactics and temperament play so prominent a part. It is only when one comes to the long distances that the theory fits in with the practice ; and it is there that one is glad to have the experience of the athlete confirmed by the experiment of the physiologist.

It is, indeed, of the utmost importance to run long distance races to schedule, with the minimum of variation in pace. The longer the race the more important does steady running become ; but even in a 3-mile race running to schedule should be practised until it becomes second nature.

Not only is schedule running important, but the athlete also wants to know the pace at which he is running and whether it is over or under the schedule rate. The method of learning to judge pace is similar to that advocated for the half-miler : to practise running lap after lap at a consistent rate and become acquainted with one's own maximum pace. To give an example, suppose A wants to run 3 miles in 14.30—very good time, but some 19 seconds outside Nurmi's world's record. On

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a track with four laps to the mile the average speed for each lap must be $1.12\frac{1}{2}$; and A should learn this pace and know when he is doing it. He will thus appreciate his own maximum pace, and be able to run his own race, trailing or leading his rivals according to the exigencies of the competition; and he will also acquire that valuable asset, self-confidence.

In practice, of course, a few variations will inevitably occur; but their extent will not be so great as to jeopardise the theory of consistent pace. For example, the first lap or even half-mile will usually be faster than the others, this being a natural tendency which should not be checked, as it gets a man into his running, secures him a good berth, and is only employing the surplus nervous energy or excitement with which he probably stepped on to the track. Plainly also the last two laps, whether the race be 3 miles or 10, are going to be influenced by the other competitors and by the final struggle for the tape. In that final struggle the runner should know his sprinting powers, which he has been at pains to develop; and he must sustain his effort right through the tape.

One of the dangers in long-distance running is that of going too fast at the start. It is equally prejudicial to success if one errs in the opposite direction. Yet how often are both mistakes made by young runners, particularly at the Oxford-Cambridge Sports, when, however, it is only fair to say that the majority of the runners are not sufficiently mature to stand the pace of first-class 3-mile running. To expect a young fellow of 20 or 21 to go his first mile in 4.45 and then carry on to beat 15 minutes is demanding extraordinary physique; and in the main long-distance runners reach their best at an age nearer 30 than 20. Once mature, however, the long-distance runner must be prepared for a rapid first mile—how rapid he can afford to make it only experience can dictate—and then settle down to a regular gait. How regular this may and indeed should

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be is evidenced by the consistent lap times of Nurmi and Ritola in their races: *e.g.* Ritola, in the 10,000 metres at Amsterdam, reeled off lap after lap just ahead of Nurmi in almost identical time for each lap, and drew rapidly away from the field, whereas one runner who ran spasmodically, now in the lead, now near the tail, was finished before half the race was run. Spasmodic running, over whatever distance, is suicidal; the pace changes of the great Finns half-way through a race are definite accelerations which they are able to sustain, and are employed to kill off an already tired opponent, but they never take the form of erratic bursts.

Section 2.—The Marathon

The original Marathon, as every schoolboy knows—to paraphrase Macaulay—was the run of Phidippides from the battlefield of Marathon to tell the citizens of Athens of their victory over the Persians. Although this remarkable run of 26 miles 385 yards was well within the compass of a man who had run from Athens to Sparta in two days—a distance of 152 miles—it proved fatal to the gallant Greek, who, gasping out, “Rejoice! We conquer,” collapsed at the city gates and died.

Now the fate of this young man may well serve as a warning to would-be adventurers on the road from Windsor to Stamford Bridge, which forms the A.A.A. championship course, or any other Marathon route. It is a grave question whether such attempts are good or not. The physical strain imposed, particularly upon people living under modern conditions of life, is undoubtedly severe. Even assuming that a man is sufficiently strong to train for and compete in such an event, the demand upon his time is almost unjustifiably great if it be remembered that athletics is supposed to be a recreation. Only if a man be a natural runner endowed with great powers of endurance, if he be over 21 or mature, and if he have the temperament and the time

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necessary for a long and strenuous course of training, should he contemplate competing. And before training at all he ought to undergo a thorough medical overhaul; not leave it until entering for the race, when, of course, he is obliged, under A.A.A. Laws, to send in a medical certificate of fitness.

With the revival of the Olympic Games in 1896 the Marathon race was instituted; and, appropriately enough, as the games were held in Athens, it was won by a Greek, Loues. It was not, however, until after the sensational race of 1908 from Windsor to Shepherd's Bush that Marathon running became popular in England. On that occasion, the Italian Dorando reached the stadium first but collapsed and was unable to finish without aid, the victory being awarded to an American, Hayes, whose time was 2 hours 54 minutes 33 seconds. Judged by present standards that time was nothing remarkable; but the enthusiasm of that day was unbounded and has rarely been rivalled in England.

Since that date the Polytechnic Harriers have held an annual Marathon race in connection with the "Kinnaird" Cup Competition, held on the last Saturday in May; and in 1926 this race carried with it the A.A.A. championship. In 1928 the A.A.A. promoted their own Marathon championship in July; another annual Marathon is that held in the North of England; and, of course, many Continental countries and America stage a championship race.

Of what type is the Marathon runner? He may be a convert from 10-miling; and both Kolehmainen, who won the Olympic Marathon in 1920, and Stenroos, who won it in 1924, had finished first and third respectively in the Olympic 10,000 metres in 1912. Probably he will be a light little man with powerful legs and fine heart and lung development. Style is less important than determination. A stylist enjoys advantages of course; but as no Marathon runner can hope to keep on his toes, his principal object should be to cover the ground

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as tirelessly as possible, and when fatigued to keep plugging along. A relatively slow arm action seems to suit the Anglo-Saxon ; the Finns have a loftier action, the merits of which have already been discussed. Long-striding is obviously out of the question ; rhythm is, however, essential.

One explanation of the severity of Marathon running is the road work, for only the start and finish of the race may be in an enclosed ground. There is no elasticity in a road such as one finds in a cinder track ; every step is a jar to the body. To withstand this shaking a runner ought to be carefully shod, and attention to the feet is vital.

Shoes should not be new, but they must be strong. Rubber soles, or leather soles with rubber inlaid, are best. Should the surface of the road be wet or greasy, leather must obviously be substituted for rubber. The shoes should fit perfectly ; and to help keep out dust and grit—to get rid of which *en route* there is no time—soft woollen socks should be worn, with elastic tops.

During training the feet may be hardened by using a little methylated spirits ; and on the day of the race either talc powder or vaseline may be used. Once the feet have hardened blisters are unlikely ; if one should be contracted let it out at once and cover with liquid court plaster.

The key to success in Marathon running, and the only means to ensure no ill-effects, is a systematic course of training. It should extend over a period of at least three and preferably four months. The training should begin easily with short walks at a pace of 4 miles per hour and light runs, unless the athlete is already fairly fit. Thenceforward the distance and pace should gradually be increased. It is a mistake to run too often ; and a better system advocates walking rather than running, which should be done at the most three times a week. On Saturday it is a good plan to have a time trial, and on a day in the middle of the week to have a run for

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speed only. Stamina ought to be developed by means of long easy runs working up to 16 miles in the eighth week, or by long hard walks, which by the same date should have reached a distance of 35 or 40 miles. At the end of the ninth week a test run over 20 or 22 miles may be made. The last week's work before the race should be quite light.

A difficulty which the fit man has to contend with is a tendency to over-increase his pace. This must be carefully guarded against and the time schedule closely followed. A desire to do too much is also liable to attack a man who is near the top of his form ; overwork in training is always ill-advised, and a man ought to finish a practice run or walk feeling comparatively fresh and with considerable reserve left in him.

With regard to diet, it is impossible to lay down hard-and-fast rules. During training work or the race it is not advisable to take solid food, although some people favour taking ripe bananas after 15 miles. Thirst should be relieved by rinsing out the mouth : certainly nothing acid should be taken. The taking of drugs not only renders one liable to disqualification—it is medically unsound.

In the race itself, although the speed will be decided to some extent by circumstances, the Marathon runner needs to guard against too rapid an initial pace. It does not pay—unless one is an exceptional runner, like the Englishman Mills—to attempt to force the pace for the first 10 miles. The only sound rule is to adhere to a time schedule. The R.A.F. runner S. Ferris, who has thrice won the A.A.A. Championship and finished fifth in the 1924 Olympic Marathon and eighth in that of 1928, is insistent on this point. In his case the variations in time for each 5-mile section over the first 20 miles are about a minute only.

The last 5 miles are admitted to be the most punishing of all ; it is here that courage as well as training counts. But the man who has the energy and enthusiasm to

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carry out the strenuous training programme, and the pluck to go on to the finish when there is nothing in him, will reap a satisfaction in his soul above the laurels with which, after all, he may not be fortunate enough to be crowned.

Section 3.—Cross-country

England is generally regarded as the home of cross-country running, and it is probably true to say that it is the country in which the sport enjoys the greatest popularity. Throughout the winter, from September until the end of March, cross-country running, or its off-shoot, paper-chasing, is practised by thousands of devotees all over the British Isles ; and although most clubs hold matches and competitions, and despite the existence of district and national championships, the majority of their supporters run simply for pleasure and exercise, treating the sport purely as a recreation.

And undoubtedly cross-country running possesses a fascination sufficient to warrant such an attitude. The monotony which inevitably accompanies long-distance track running is absent from work over the plough ; indeed, variety is of its essence, and no two courses are alike. The health-giving virtues of the sport scarcely require commendation ; but one may touch upon the opportunities it affords for team work and training together in packs of graded strength. Its variant, paper-chasing, affords the further thrill, for hares (of whom there are usually two) and hounds alike, of a hunt ; and the fun of laying false trails or of scenting them out is not inconsiderable.

The utility of cross-country running as a foundation for track work has been discussed in section 1 of this chapter. It was pointed out that although a few exceptional performers on the track were also successful over the plough, the majority of track runners are well advised to treat cross-country running as gentle exercise

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to preserve condition during the winter months, and not to indulge in a severe competitive season.

Another argument in support of the theory that only in exceptional cases do successful performers in the one sphere repeat their achievements in the other is to be found in the different style employed in the two cases. Primarily the principle of conservation of energy applies to both cross-country and distance running ; and this principle involves the cultivation of an effortless style. But whereas the track runner can develop a rhythmic stride and balanced body carriage, with a smooth swing of the arms, his friend across the plough must often forfeit rhythm in order to preserve greater control over his balance under the unfavourable conditions with which he often has to contend. Quite evidently the crossing of ploughed fields, the surmounting of hedges or other obstacles, or the fording of a stream, not to mention the negotiation of hills, involve emergencies which will throw a delicately balanced, purely rhythmic runner right out of his stride. Only upon hard ground or road will the style advocated for long-distance runners be of practical utility : under such conditions it may be adopted in its entirety by the cross-country runner.

Conservation of energy being the fundamental principle, any question as to the best method of surmounting the different obstacles which confront the runner is answerable by its application. In dealing with plough and very rough ground, for example, the stride should be shortened and the body inclined forward ; normally, the former should be as even and natural as possible, avoiding, as the track runner was advised to do, overstriding. This method of crossing broken ground helps to preserve the body balance and eliminates the chance of floundering. The stride should also be shortened in taking hills ; but here the body should be kept more upright. Similarly in going down hills, particularly if they be steep, because by the shortened stride the

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balance is retained. Whether ascending or descending hills racing is definitely to be avoided. It consumes too much energy, and in descending is provocative of stitch.

A diverting and sometimes painful item in cross-country running is the negotiation of obstacles. Gates and fences are usually best surmounted by climbing : it employs less energy than a vault and the loss in time is negligible. Likewise, it is preferable to run through streams and ditches, cold and unpleasant though they be, rather than to jump them, unless their breadth is well within the runner's compass. The method which involves least fatigue and maintains the greatest rhythm of arms and legs is always the best ; and towards the end of a race anything which tends to throw the tired runner out of his stride, *e.g.* jumping a ditch, may prove fatal. For this reason also the runner should never hesitate before taking an obstacle : experience will teach him the best method of attack and enable him to apply his knowledge almost automatically.

The severity of the climate and the strain of a 5 or 7-mile run demand the cultivation of considerable stamina. Training should be gradual and racing avoided for the first six or even eight weeks. Walking is as invaluable an aid to the creation of stamina for cross-country work as in the other branches of distance running already discussed ; and long swinging walks form the variation to the slow jog-trots with which it is recommended that the season be begun. These slow runs should be taken two or three times a week over distances varying from 5 to 7 miles ; and during their course every opportunity should be seized to practise taking obstacles. Subsequently, *i.e.* in the second month, faster work should be done, still over 5 to 7 miles, and the system tuned up to racing fitness, when the competitive cross-country runner should endeavour as far as possible to seek out races of gradually increasing severity. The ability to start fast should be cultivated, for, whilst guarding against squandering one's reserve

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too early, one must be prepared in modern races to keep up with the leaders, who almost invariably (particularly if there is an early obstacle) go off as if about to run a mile.

One of the joys of cross-country is community running. The regular Saturday afternoon jaunt in a pack selected because its standard coincides with that of oneself is a most enjoyable experience, despite the cold winds and rain so often encountered. It is a happy custom among some hare and hounds clubs to arrange that even in the non-competitive packs the men shall keep together until the last mile and then have a race home.

In matches and competitions the team element is conspicuous. There are two methods of scoring in cross-country races : the one individual, and the other by teams. In the team classification, points are scored by the first six (or any number agreed upon) men home of each team, the sum total representing the points obtained. The team with the lowest score wins. It may further be arranged that, say, a dozen men run per team, and perhaps only six score, but the second six, by finishing high up the list before some of the scoring six of another club, may yet assist their team by pegging back their opponents. Good packing, whereby the members of a team endeavour to stick together and by their presence encourage one another, at any rate until the final stages of the race, is an art which, well performed under the eye of a good captain, can win valuable points for a team, besides providing the team-spirit which competitive athletics so often lacks.

In England the management of cross-country running generally during the season is delegated to the National Cross-country Union. The Union has power to draw up regulations for the conduct of the sport, subject to the approval of the general committee of the A.A.A., which body can also hear and finally determine appeals from decisions of the Union.

Of late years cross-country running has grown

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considerably in popularity abroad. In 1912 a cross-country race was included in the Olympic Games and won by H. Kolehmainen; in 1920 and 1924 it was again held and won by Nurmi. On the last occasion, under a scorching July sun, it was demonstrated by the number of serious casualties that the event was unsuitable for the time of the year, and it was eliminated from the 1928 programme. As an international sport, however, its general popularity is undiminished; and in the annual contest between France, Belgium, England, Scotland, Ireland and Wales, which began amongst some of those countries as far back as 1903, the French have given the British runners a sound beating on at least four occasions since the War. The sport is also prevalent in the United States; but the severity of the climate considerably abbreviates the season.

It may be added that this sport seems scarcely suitable for women on either physical or æsthetic grounds, although indulged in by certain English ladies' clubs.

Section 4.—Steeplechase

This is another event indigenous to Great Britain, and one which during the summer is a popular feature at sports meetings of all kinds. Spectators invariably derive much amusement from the antics and misfortunes of the competitors in the water-jump; and the distance runner finds the event a pleasant diversion from his more serious labour.

Unfortunately, as an international event steeple-chasing cannot be regarded as standardised. True, it features in the programme at the Olympic Games under standardised conditions; but those conditions are, with every respect to the I.A.A.F., a travesty of those governing the sport as practised in England. The event in the games is little more than a track event, with a few light hurdles and a water-jump thrown in. At Amsterdam it was actually run upon the track, a small section of

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grass, with the water-jump protected only by a bar and a few plants, being included. Consequently, the race became almost a gift for the pure track runner, the distance being 3000 metres.

In Britain the event is run entirely on grass; the hurdles, which should not be more than 3 feet in height, are set up about every 75 yards; and the water-jump is guarded by a quickset hedge, surmounting the hurdles. The championship course since 1913 has been standardised at 2 miles; but many variants of this distance are introduced by sports promoters, and in the British Empire *v.* United States match the pure 440 yards hurdler is given his opportunity, for the four relay runners have to cover only two laps, or less than half a mile, apiece.

The race, even in England, is primarily the perquisite of the 4-miler; but skill in taking the obstacles is of greater service here than in the event as held abroad. Good hurdling is not essential, merely an advantage, inasmuch as it reduces the amount of energy employed; for to jump each hurdle, as many runners do, is most wasteful. More important is the method of negotiating the water-jump. The better opinion inclines to the view that a clear leap is too exhausting. A jump over the hedge, and a quick step forward to carry one clear of the water before one either stumbles or is trodden upon, is generally recommended. It may be added that the A.A.A. Rules provide that every competitor must go over or through the water, and that jumping to the right or left of the water-jump entails disqualification. And, incidentally, black or dark blue shorts must be worn.

CHAPTER IX

HURDLING

THERE can be little doubt that hurdling bears the palm with the athletic public as the most spectacular and exciting of all the events. It is the rule rather than the exception to find a crowd of spectators brought to their feet by the thrill of a hurdles final—an indication of popularity which even the breathless tension of a sprint race would find it hard to equal. The hurdle race is more spectacular than the sprint, and whilst embodying a relatively equivalent amount of speed, it both demonstrates the precision of a highly perfected technique and also admits of the entry of that element of chance which in itself has such definite appeal to the sporting public. From their point of view it is always a fine sight; from the athlete's it is a fine exercise and a fine race. Hurdling still occupies a somewhat anomalous position between the field events proper and the track events, though it still frequently finds its place among the former even on present-day programmes. One presumes this is rather because the short hurdle race (120 yards) is still occasionally run on the grass or "field" encircled by the track—*e.g.* in the A.A.A. championships at Stamford Bridge, where, unfortunately, the grass has by no means the billiard-table surface one would wish for—and not so much because in the early days of the event the jumping element ranked higher in the hurdler's consideration than did the running pure and simple. In other words, the event was by way of being a "running field event." The manner in which this conception has gone com-

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pletely out of date and has given precedence to an almost diametrically opposite opinion (in which hurdling is looked upon rather as an "obstacle sprint race," with the jumping factor reduced to something to which the hurdler himself would probably prefer not to apply the term "jumping" at all) will be dealt with in later paragraphs.

Hurdle races now take place over quite a number of distances, the commonest being the 120 yards (or 110 metres), the 220 yards (or 200 metres) and the 440 yards (or 400 metres). Besides these distances, however, there are run races of 50, 60 and 70 yards, 80 metres, 300 yards and steeplechases. In fact in America almost any distance from 40 to 300 yards is run as a hurdle race. The 50 and 60 yards hurdle races are distances commonly used in women's sports, being races over three and four flights of hurdles respectively, 2 feet 6 inches high in both cases. It should be noted that in this country 100 yards is the championship distance for women's hurdle races. The 70 yards race belongs essentially to the indoor meetings in America and consists of five flights of 3 feet 6 inches high hurdles, 10 yards apart, with a start and finish of 15 yards each. The 80 metres is the new Olympic race for women to be introduced in 1932. The 300 yards is really a freak event and does not occur on any standard programme. Steeplechasing, which takes place over a series of 3-foot hurdles and one water-jump, is discussed elsewhere.

Before passing to a more detailed consideration of the three usual hurdle races, perhaps one may with advantage mention here some facts more or less generally applicable to hurdling as a whole.

The type of athlete that on the average makes the best hurdler is the rather tall man—around 6 feet in height—with long legs and loose flexible hips and shoulders; one to whom the adjective "lithe" can be applied admirably, whose limbs are well and cleanly built, and the upper part of whose body is rather on the light side. As ever, of

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course, this rule has its exceptions, and though such great hurdlers as A. C. Kraenzlein (U.S.A.), Earl Thomson (Canada), who, being 6 feet 4 inches in height, was rather on the tall side, R. Simpson (U.S.A.), G. C. Weightman-Smith and S. J. M. Atkinson (South Africa) and F. R. Gaby (Great Britain) conform remarkably well to the description stated above, we still have in England to-day a hurdler who is practically the equal of most of them and yet is decidedly short in stature—Lord Burghley.

Speaking generally, again, the good short distance hurdler tends to be a good average sprinter. It is doubtful, however, whether more than one of the above-mentioned six world-famous hurdlers could record a time of inside $10\frac{1}{2}$ seconds for the 100 yards, though Kraenzlein won the Olympic 60 metres flat in 7 seconds in 1896; and many crack quarter-mile hurdlers can return 49 seconds for the 440 yards flat. This is really a point of considerable interest, for it goes to show that despite the fact that the whole trend of modern hurdling has been to reduce the element of jumping in actually crossing a hurdle to the minimum, it is still apparently the modification of this jumping talent when suitably controlled, rather than sprinting ability, which makes the first-class hurdler.

The hurdler's shoes should be very similar to those used by the sprinter—that is, light and closely fitting, but if anything a little stouter and stronger, as the strain imposed upon them in taking off at a hurdle and in landing from it is far greater than anything a sprint race pure and simple will produce. In this respect it is of importance to note in passing that attention to the condition of both shoes and laces is a more vital matter in this race than, perhaps, in any other, for a fault in this part of one's equipment in a hurdle race may entail not only the disappointment of a lost race, but also the possibility of at least a nasty fall, if not any more serious mishap. The hurdler's shoe, like the jumper's, must have the extra pair of heel spikes, both to give a better

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grip and ensure greater stability and also to lessen the jar of landing rapidly from the successive hurdles, an added means to these ends often being a light leather ankle strap.

Section 1.—120 Yards Hurdles

As far as records show, this is not quite the oldest of the hurdle races, for prior to 1864 a 140 yards race was the usual distance; but from that date the 120 yards became the accepted distance, and still to-day holds premier place amongst them, being a standard event on practically every athletic programme. It has featured on the A.A.A. championship programme since the inception of that meeting in 1866, when the event was won in what to-day we would consider the astonishing time of $17\frac{3}{4}$ seconds. This "record" was, however, eclipsed three years later, when $18\frac{3}{8}$ seconds was recorded as the winning time, and it was not until twenty years after the first championship—in 1886—that the 16 second level was reached, and at that time 16 seconds was a world's record! It was yet another ten years almost—1895—before 16 seconds was broken; and though this feat was repeated seven times previous to 1914, two of them being victories for that early master of hurdling, A. C. Kraenzlein, to whom is ascribed the introduction of the new "straight leg" style into this country and who held the A.A.A. pre-War record of $15\frac{3}{8}$ seconds, it is in the last eight years that hurdling has made such phenomenal strides. And now if we see a first-class race won in anything over 15 seconds we almost automatically pre-suppose some adverse condition of track or climate to account for it. The British record, held jointly until 1928 by four Britishers—Earl Thomson, Lord Burghley, G. C. Weightman-Smith and F. R. Gaby—with $14\frac{1}{8}$ seconds, now stands to the credit of another—S. J. M. Atkinson (South Africa), who recorded $14\frac{7}{16}$ on a grass track. Two of

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this celebrated quintet are responsible for the existing world's records for the 120 yards hurdles (Earl Thomson, $14\frac{2}{8}$ seconds) and the 110 metres hurdles (G. C. Weightman-Smith, $14\frac{3}{8}$ seconds).

Despite the fact that of the sixty odd A.A.A. championships held to date four out of every five have been won by Englishmen, there is little doubt that from the beginning of the century until a few years ago America held an unchallenged supremacy in the hurdling world. But to-day it is of interest to note that English, and even more so Empire, hurdlers are at least the equal of America's best.

As an Olympic event the 110 metres hurdles has featured since the first re-institution of the games in Athens in 1896, when it was won by an American in $17\frac{3}{8}$ seconds. America has scored six of the eight possible Olympic victories to date, the remaining two being those of Earl Thomson (Canada) in Antwerp in 1920 and of S. J. M. Atkinson (South Africa) in Amsterdam in 1928.

One has gone into the history of this event at some length not only because of its intrinsic interest, but also because it is so clearly indicative of as remarkable a transformation as has occurred in the history of all athletics. One cannot imagine that the actual physical prowess of man has altered to any material extent in sixty years, and yet he is now able to run over ten obstacles and 120 yards practically four seconds faster than he could in 1866. Whence, then, comes this astonishingly rapid development. Undoubtedly it has been principally due to the complete revolution in hurdling style which occurred early in this century, and with which, as has been mentioned, the name of Kraenzlein is associated. It appears that the new style—the "straight leg" method—had had exponents in England previous to Kraenzlein's visit in 1900, but it was his phenomenal exhibition in that year—he established the then miraculous time of $15\frac{5}{8}$ seconds—which decided once and for

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all that there were no longer two ways of hurdling. The subsequent revolution in style was, however, a gradual one, and the old methods died hard ; so much so, that it is really only now that we are seeing for the first time the straight leg style practised in all its intricate perfection by a generation of hurdlers born to it and brought up on it.

Before, however, going into the details of styles both ancient and modern, let us for a moment consider the track arrangements and paraphernalia pertaining to the so-called " short " hurdle race, inasmuch as they have a very definite bearing upon these details.

The race is run over 120 yards, during which ten hurdles are negotiated. These hurdles are light, rectangular frames, standing on wooden feet and in no way attached to the ground (*see* Illustrations). The hurdles must be not less than 4 feet in width and are 3 feet 6 inches high, and they are so spaced as to leave 10 yards between each flight, whilst the distance from the starting line to the first hurdle and from the last hurdle to the finishing tape is in both cases 15 yards.

It is proposed to divide the consideration of the details of the actual race into the following paragraphs: (1) The Start ; (2) The First 15 Yards ; (3) Hurdling—(a) Old and (b) New Styles ; (4) The 10 Yards Between Hurdles ; (5) The Last 15 Yards and Finish ; and to conclude this section with some suggestions with regard to training for hurdle races and with some pertinent rules on the subject.

(1) *The Start*.—Though admittedly it is actual hurdling style—that is, the method by which the hurdle is crossed—which differentiates between an average and a first-class hurdler, the latter will never rise to the front rank unless he be endowed with or has developed a suitable optimum of speed. We have mentioned above how few of the world's great hurdlers have been really good sprinters, but this does not imply that they are slow runners. The hurdler, however, who attempts any

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flat distance over a quarter-mile and makes a reasonable success of hurdling as well, is indeed a *rara avis*. Of course, on the other hand, it should be pointed out that the really fast sprinter can give quite a reasonable account of himself "over the sticks," however little style he may possess; but when it comes to a race between the good hurdler with average speed and the good sprinter with average style, it will be found that victory will go to the former nine times out of ten at least. However, speed *is* a requisite of good hurdling, and as will be pointed out later, its acquisition by suitable training must be assiduously cultivated.

This brings one to the point that in hurdle races the sprint start—or "crouch" start—is as essential as it is in pure sprint races and must be made if anything more accurately, for success in reaching and taking the first hurdle depends very much upon it. The details of this starting position will be found fully discussed in the chapter on sprinting, to which the reader is referred for further information. Here it need only be stressed that, since the whole hurdle race has to be worked out to a matter of inches, meticulous attention must be paid to these details, and in particular, perhaps, to the efficient digging of starting "holes," be the track grass or cinders. For if these holes are carelessly made, or perhaps even neglected altogether, the first stride will be in the wrong direction or of the wrong length, and consequently the first hurdle will not be taken from the proper spot, and anything from the loss of a valuable fraction of a second to the complete chaos of a smashed hurdle or a fall may result.

In starting, the hurdler must avoid the temptation to look up at the first obstacle and must rigidly adhere to the strict rules of sprint starting, keeping his eyes fixed on approximately that point which his first foot will strike as he comes out of his holes. Practice will produce that all-essential confidence in the knowledge that if this first stride is correctly made the first hurdle will be

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correctly taken. The question regarding which foot is to the fore at the start of a hurdle race is one which depends upon various factors and differs with different hurdlers. This detail should be carefully worked out from the knowledge of which foot is naturally and automatically thrown forward in taking a hurdle. With this data and a consideration of the number of strides taken in reaching the first hurdle, it is a simple matter to determine the front leg in starting accordingly.

(2) *The First 15 Yards.*—Even as the start has been shown to embody those principles of extreme accuracy which underlie all good hurdling, so must the approach to the first hurdle be exact in every respect. Constant practice will be necessary to ensure these 15 yards being covered in exactly the same way on every occasion, and this is what must be aimed at—a complete mechanisation of action—so that the approach becomes sufficiently an unconscious act to allow full concentration on the production of the most perfect style in crossing the actual hurdle. These first few yards are important from two points of view. First, they must provide opportunity for the production of maximum acceleration in the limited distance allowed, for once actual hurdling is commenced the regularity of the repeated sequence of events allows of relatively small increase in the velocity gained by the time the first hurdle is reached. And secondly, they must ensure that the first take-off is from that exactly correct spot which allows the hurdler to drop automatically into the rhythmical sequence of taking his successive obstacles mentioned above. To bring about these two desired results, and the consequent, and almost as important, psychological advantage of reaching the first hurdle with a slight lead or, at any rate, of being able to take it with ease and accuracy, the distance must be covered in a constant number of suitably regulated strides. This number varies with the individual hurdler, and though a few very long-legged men have found their optimum in seven strides, by far

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the majority use eight or nine, according to their own peculiar characteristics.

(3a) *Old Style Hurdling*.—As this style has now been definitely rejected and is not taught to-day, it needs but brief mention. But from a historical point of view and as showing whence has come the relatively recent rapid advance in hurdling proficiency, it is of considerable interest.

As was pointed out above, it was this style which was a factor in inducing the then existing powers that be to include hurdling amongst the field events, for it was the jumping element—an element which embodied parts of both the running long and high jumps—which was of primary importance. The race was essentially a series of small jumps with a run between, a preliminary and a final run. The hurdler almost stopped before each obstacle, gathered himself together with arms thrown up and forward and legs tucked up beneath him, leapt his hurdle, landing on the other side with practically complete loss of momentum, and then started off again to repeat the performance another nine times! The terrific loss of time involved in this so-called “hanging” on the hurdle can only be fully appreciated when an old and a new style hurdler compete in the same race—a rare sight nowadays. Before leaving the matter, however, it must in all fairness to the departed be said that if this style has failed from a utilitarian aspect its successor must give it points from the point of view of grace and beauty of movement.

(3b) *New Style Hurdling*.—Herein, of course, lies the secret of the whole matter to-day, and it is probable that in a few more years only the veterans of the track will be able to recall anything but the “straight leg” style. Where it came from and who introduced it to this country are matters which have been to some extent dealt with above, and are really of little concern. The straight leg style has come to stay. To-day it is hurdling!

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The essence of the style lies in the eradication of anything approaching a jumping movement in crossing the hurdles. In place of this there is what may be called an "elevated stride." The obstacles literally are taken in one's stride, the legs being, as it were, split over the hurdle, whereby both the time the hurdler is off the ground and the height he is above it are reduced to a minimum. At the same time, of course, the inevitable pause ("hang") associated with the old style is removed, there being just as little interruption as possible when taking the hurdle in the regular striding action which dominates the whole race, and hence the minimum loss of impetus and momentum. The moment the body leaves the ground motive force is removed, and therefore the hurdler's object is to return to *terra firma* again just as quickly as possible, having in the meantime expended the minimum of energy in surmounting his difficulties. The stride in mid-air, which is the outcome of straight leg hurdling, ensures all these objects being attained with the maximum efficiency and speed.

In detail, this style consists in rapidly raising the leading leg, by flexing it at the knee, but just as little as possible, and then elevating it to a horizontal position and straightening it out over the hurdle.

Which leg shall lead is a matter for the individual, and is usually decided by natural inclination. But having decided which leg is naturally the leading leg, it is, of course, of vital importance to maintain it always as such, and it has already been shown how the starting position is dependent upon the result of this decision.

At the same time as the front leg is going up and straightening out, the rear foot is raised strongly on to the toes, and this leg automatically becomes straightened out also. The lean forward of the body and head is meanwhile slightly exaggerated, so that the weight is thrown forward, this being further assisted by the arm of the opposite side to the leading leg starting to come forward. The correct position in this early stage of the

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movement is shown well in Fig. 7. To reduce the suggestion of any jumping action—hence unnecessary loss of energy in driving the body in an upward direction—to a minimum, the ideal to be aimed at is that the back toe should be just losing its contact with the ground as the front one crosses the hurdle, thus illustrating very well the “split” action of the style.

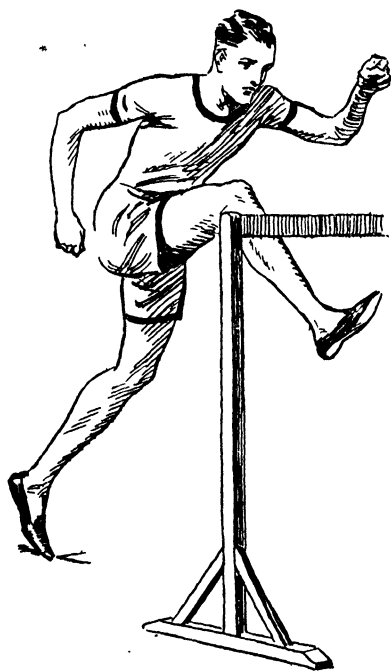


FIG. 7.

That the time spent in the air may be as short as possible, the object is first to get just as near to the top of the hurdle as one can without touching it; and secondly, to get the front leg down again as near the far side of the hurdle as is feasible.

The stages by which this is brought about are well shown in Figs. 8 to 12, which should be consulted in reading the following observations.

As the throwing forward of body weight and reaching out of the lead-

ing arm tend to depress the leading leg again on the far side of the hurdle, the back leg is meanwhile drawn up rapidly, flexed at both hip and knee, and bent out horizontally, so that as it crosses the hurdle, thigh and leg lie parallel to the top bar, and as close to it as possible. They ought, in fact, almost to graze it, and because this so often happens both in training and competition, hurdlers commonly wear a light leather pad on knee and ankle to protect them. As the body rides

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over the hurdles, it and the head are thrown well forward, whilst the leading arm (usually the left, as the right leg is more commonly the leading leg) reaches out almost to touch the leading foot. The other arm is also raised and often thrown somewhat back, but as to some small extent this must act as a retarding force, it should, if

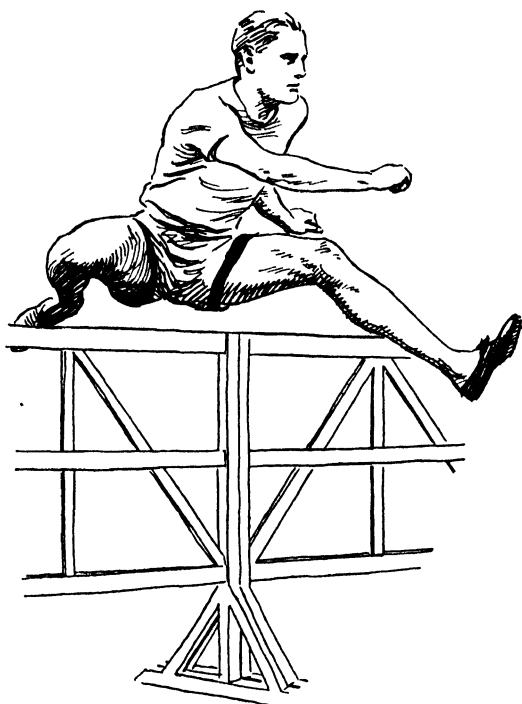


FIG. 8.

possible, be kept well bunched up to the side, so that it can be driven forcibly forward from the shoulder when the landing takes place. One of the criteria of good hurdling is that when actually crossing the hurdles the head should rise to only an imperceptible degree above the line it occupies during the time the runner is on the ground. The landing is effected by snapping the leading

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leg down smartly, this being assisted by the forward and downward transmission of the body weight, whilst at the same time the back leg is swung vigorously round, down and through from the top of the hurdle, so that it passes its fellow almost at the moment the latter reaches the ground, and is driven well forward in company with its opposite arm, which, as has been said, should have been previously bunched up at the side to execute the next stride.

It will thus be seen that the process of crossing a hurdle is an intricate one, and before that essential

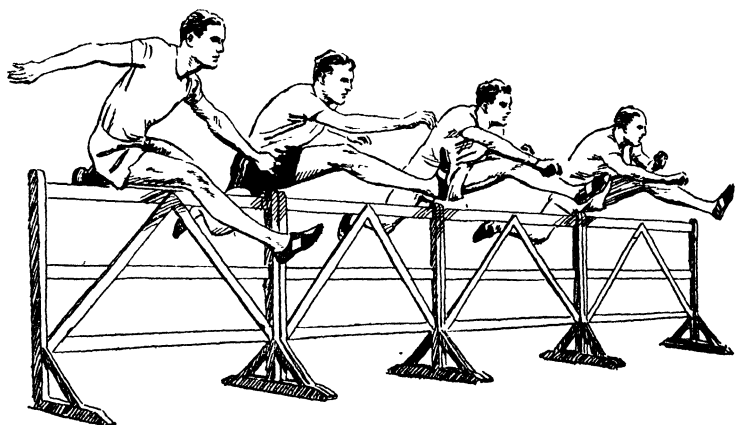


FIG. 9.

accuracy can be obtained which permits of perfect equilibrium and control being maintained during the flight and at the same time an efficient conservation of energy, much consistent, intelligent and painstaking practice will be required. Hurdling does, in some respects, conform to a type of field event in that the optimum is reached only by a complete mechanisation of the action. But, assuredly, the confidence gained by an increasing proficiency in style is a sufficiently valuable asset to the hurdler to be worth much seeking.

One further point only needs mention with regard to this complicated process of crossing the bar, and that

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is the respective distances from the take-off point to the hurdle, and from the hurdle to the landing point, which constitute this huge "elevated stride." The researches of various enthusiasts have put these at an average of 7 feet 6 inches up and 4 feet 6 inches to 5 feet 6 inches down, thus making a total stride of from 12 to 13 feet.

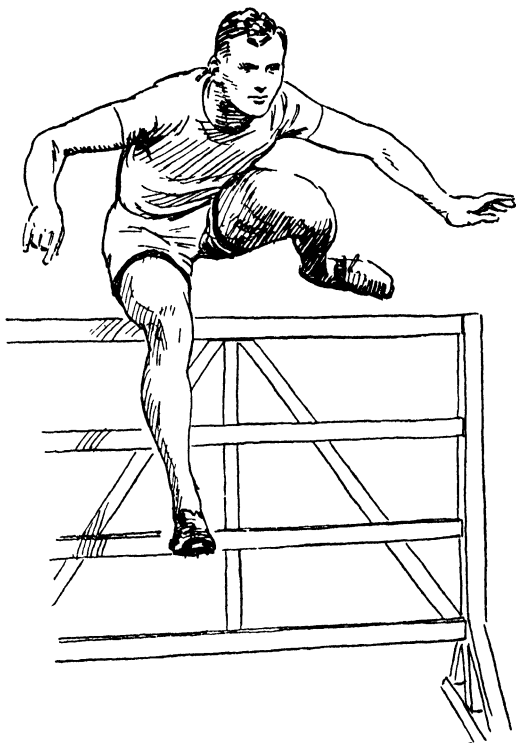


FIG. 10.

(4) *The 10 Yards Between Hurdles.* — This as a separate title is, of course, not quite accurate, for some part of that 10 yards we have already discussed in the rise to and landing from the hurdle. The rest consists simply of three regular strides between every two hurdles. These strides should be taken with a rhythmical

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precision which varies practically not one iota from hurdle to hurdle, so that the whole action comes to suggest the almost monotonous ticking of a metronome, with every fourth beat exaggerated and prolonged. Taking the distance represented by this fourth "beat," *i.e.* the distance traversed in actually crossing the hurdle as an



FIG. II.

average 12 feet 6 inches, the three inter-hurdle strides will approximate to 6 feet each, the first one after landing being probably a shade less than this and the other two, therefore, proportionately, a shade longer. The important thing to remember with regard to these three strides is that they must be made in a perfectly straight direction, with no zigzagging from side to side, which would upset the all-essential equilibrium and poise

necessary for taking each successive obstacle.

(5) *The Last 15 Yards and Finish.*—Little need be said of this stage of the race. It is here, again, that the sprinting capabilities of the hurdler come to the fore. Landing from the last hurdle, he must endeavour to make the drive forward with the rear foot and opposite hand even more forcible than usual, for the object now is to pick up again as much acceleration as the small

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distance remaining will allow. Many a hurdle race has been won in these last few yards by the man who has developed the power of rapidly getting up speed. It is essential that good sprinting form, in which the factor of keeping one's gaze firmly fixed in one's own lane is not the least important, be maintained to the end, and that the ideal sprinting finish of running not at but

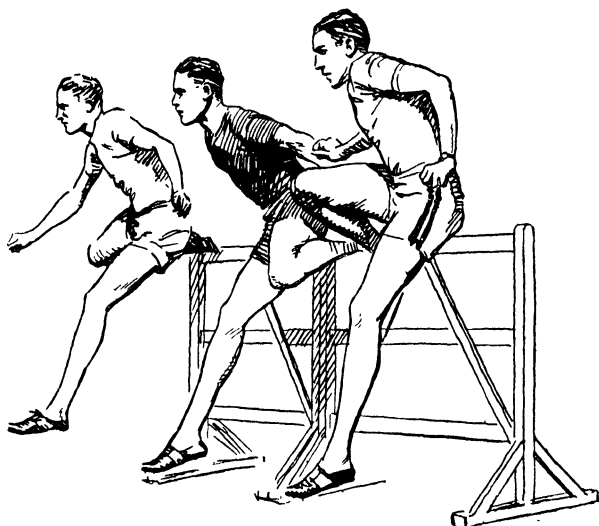


FIG. 12,

through the tape be aimed at always. To counteract the common tendency to stumble and stagger during the run in, which is so often seen and is due, presumably, to the sudden transition from the set regular three-stride action between the hurdles to the free, open, swinging stride of sprinting, or, again, perhaps to the tendency to "press" when the end of the race is in sight, the first stride or two after landing from the last hurdle should be short and rapid, gradually lengthening out to the individual competitor's average sprinting stride. In other words, rapid but progressive acceleration pays better in the long run than attempting to assume

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highest speed immediately by a full-length stride after the last hurdle. The steadiness and balance which experience brings to the actual hurdling bears its richest fruit in these last 10 yards when it is of paramount importance to have such perfect co-ordination and control that every ounce can be put into this last supreme effort without producing any detrimental loss of form.

Training.—Training for hurdle races may be divided into three sections, viz. : General Training, Sprinting Training and Actual Hurdling.

Under general training one is referring not so much to the general principles of getting physically fit, which are set out at length as applying to all aspects of athletics in an earlier chapter, but rather to exercises specially directed to produce proficiency in hurdling.

In the early days of training, good brisk walks can be of great value to the hurdler, provided always they are not carried to the extent of muscular stiffness. For supple muscles, loose joints and a general flexibility of the body are the essential requisites of the successful hurdler. Hence the many and varied exercises suggested and used to accomplish these ends, exercises which at first should form practically the whole of the hurdler's training, and later should always be used as a preliminary to training proper or to competition. One may mention a few of those more usually practised.

As a beginning, simply touching the toes with knees straight and "high-kicking" are both of considerable value as muscle looseners, as also is the Russian leg dance, in which, sitting upright on the heels, alternate legs are kicked out to the front. Perhaps the commonest exercise of all is the so-called "splits," in which one simply assumes on the ground (or floor) a position corresponding relatively to that which is taken up when one is actually crossing a hurdle, *i.e.* one leg straight out in front and the other drawn up at right angles to the body with hip and knee flexed. The body is then swung forward and attempts made to touch the front toes with

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the fingers. Again the difficult action by which the back leg is swung up, over and forwards can be practised simply standing upright on what would be the leading leg, or, better still, over either an actual hurdle or some object of corresponding height.

Concerning sprinting training little need be said here, as all necessary detail will be found in another chapter, except to stress the importance of this part of a hurdler's work. Sprinting should always form at least 50 per cent. or more of his training—and special attention should be paid, first, to the minutiae of starting technique; secondly, to the rapid development of speed, so essential in those initial and terminal stages of his race; and lastly, to the practice of correct finishing form. To develop stamina he should also at occasional intervals, once or twice a week when fit, run through distances from 150 to 220 yards.

Hurdling training itself may be said never to necessitate running over a complete flight of ten hurdles. To begin with, while style is being cultivated and polished up, the use of 3 feet hurdles is to be advocated, and at first these can with advantage have swinging or balanced tops. Later, one may tackle the full-sized hurdle, but it is never necessary to use more than three or four of these at the outside, whilst in the early stages of training it is as well to concentrate on the actual crossing of the obstacle, and cover the intervening spaces with five small strides instead of the normal three longer ones. The three-stride rhythm in itself needs very little practice, and will come almost automatically in competition if the hurdling style is good. Apart from this latter, the two great things that demand constant and careful practice are the first 15 yards and the last 15 yards, and there are many who, while remembering the former, shamefully neglect the most important latter.

Finally, in hurdling training remember that patience and perseverance are essential, that it is much better to build up a good style slowly from a lot of little points,

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each learnt carefully and studied closely, than to acquire a bad style rapidly from a few points half-learnt and carelessly agglomerated into an unstable whole.

With regard to hurdling rules, there are only relatively few of intrinsic interest, such as the disqualification which results from knocking down three or more hurdles (two in the 70 yards indoor race), whilst, strictly speaking, "swinging" or "rocking" hurdles count as broken, and no international record can be allowed be there only one hurdle broken. Again, in any hurdle race the hurdle must be crossed by the whole of the body, and any trailing of a leg alongside a hurdle entails the penalty of disqualification.

Section 2.—220 Yards Hurdles

This event, though not yet honoured with a place on the A.A.A. programme, and having occurred only twice (as 200 metres) in the Olympic Games, of 1900 and 1904, is a standard one in America, where it has featured for over forty years. It is somewhat natural, therefore, to find that the world's record lies to the credit of an American, C. R. Brookins, who put up the amazing time of 23 seconds for the distance. Incidentally, this leads one to a genuine appreciation of the great Kraenzlein, who, thirty years ago, recorded 23 $\frac{3}{4}$ seconds for the distance. In this country, since the inclusion of the event in the Oxford and Cambridge Sports programme in 1922, and with its spasmodic appearances in those great meetings between these two 'Varsities and the American Universities, it may fairly be said that it has gained considerably in popularity both with spectator and athlete, and there are many to-day who would like to see it find a place in the regular athletic programme. Hurdle races are undoubtedly sufficiently attractive from all points of view to merit the inclusion of more than one distance in the average competition.

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The British record, incidentally, is $24\frac{7}{10}$ seconds and is held by Lord Burghley.

The race is run over ten hurdles ; but these are, in this case, 20 yards apart and only 2 feet 6 inches in height. The distance from start to first hurdle and from last hurdle to finish is, in either case, 20 yards.

The extra distance brings in the additional requisite of stamina, and it is indeed astonishing to discover how extremely fatiguing the running of a mere furlong over obstacles can be ! Many a well-trained man, good sprinter and good hurdler, too, though he may be, has at least staggered the last few yards of this race if not run himself out completely. To develop this necessary stamina, therefore, quite a fair amount of training should be done in the earlier stages of work at distances around 300 yards.

Sprinting ability is relatively even more important in this event than in the shorter hurdle races, and over this distance a good sprinter who possesses but little hurdling style or technique is much more likely to make a successful match of it with the rather slower but more expert hurdler than he was over the 120 yards. Hurdling technique, however, still remains a most potent factor, and the straight leg style should again be used. With the lower hurdles, of course, the " hurdle-in-one's-stride " idea (the " step-over " action) comes more into evidence, and again the aim should be to reduce the race to a series of regular mechanical strides. It has been estimated that the optimum is seven strides of approximately 7 feet each between hurdles, with an initial run up of about eleven strides. Until a considerable degree of fitness and proficiency has been reached it is unlikely that the 220 yards hurdler will be able to maintain this precise regularity right through to the end of his race, but it is this he must aim at, for here, as in all hurdle races, it is consistency which tells in the long run.

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Section 3.—440 Yards Hurdles

This race, though dignified by being both an Olympic and an A.A.A. championship event, is run scarcely more frequently in this country than even the 220 yards hurdles, which occur only in the Oxford v. Cambridge Meeting. This is not because it is not a good event and a popular event, but the gruelling nature of the race is not exactly likely to attract large numbers of competitors. It is probably of all the events on an average athletic programme relatively the most strenuous and exhausting.

As an Olympic event it has featured on all the programmes except two (the first in Athens in 1896 and that of the 1912 Stockholm Games, when it was temporarily dropped), and until the 1928 Olympiad of Amsterdam, when it was won for Great Britain by Lord Burghley, has provided a continuous succession of American victories. The same great hurdler (Burghley) holds the British record for the event of 54 seconds, a time which is, however, well behind the world's record of $52\frac{3}{8}$ seconds established by F. A. Gibson (U.S.A.).

Incidentally, Taylor of U.S.A. ran 400 metres hurdles in 52 seconds this year (1928).

The event became an A.A.A. championship in 1914, in which year it was won in $59\frac{1}{8}$ seconds! and of the dozen odd competitions held to date only three have been won by other than an Englishman—a record indicative of Great Britain's high standing in this as, in fact, in all hurdle events.

The race is run over ten hurdles, the height of these in this case being 3 feet. Between the hurdles a distance of $38\frac{1}{4}$ yards is left; the run up to the first hurdle is $49\frac{1}{4}$ yards and the finishing distance from the last hurdle $46\frac{1}{4}$ yards.

The race is run with the hurdles *en échelon* round the track, and hence, besides possessing running ability and

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hurdlng technique, the quarter-mile hurdler must be a good judge of pace, both his own and his opponents', for it may be that drawing an outside "string" he has to wait until the home straight before coming on terms of relative equality with his opponents. The distance necessitates very arduous training in order to attain to a satisfactory degree of physical fitness, and this training should be on the lines of that laid down elsewhere for the quarter-mile (*q.v.*), though, generally speaking, it is found that the quarter-mile hurdler conforms rather to the half-miler than to the sprinter type of athlete.

Hurdling technique is much the same as for the shorter distances, and an attempt should be made towards set regularity of stride throughout the race, though sheer fatigue will usually render this difficult if not impossible. For the early part of the race it should be possible to maintain a steady fifteen strides between hurdles, but in the last 120 yards or so it is probably often a safer policy to increase this to seventeen rather than risk having to take off from the wrong foot, a contingency which often arises about this stage in the race from an involuntary shortening of the stride secondary to fatigue.

CHAPTER X

JUMPING

Section 1.—Long Jump

THE long jump—or, as it is often less appropriately called nowadays, the broad jump—is one of the “old stagers” amongst the field events. It has featured on athletic programmes since the inception of organised athletics in the middle of last century, has been an A.A.A. championship event since 1866, and an Olympic event since the re-institution of the games at Athens in 1896. It is interesting to note that though the English native long jump record (24 feet 2½ inches) is now almost 2 feet behind the existing world’s record, in all the sixty odd A.A.A. championships held to date only ten times has the event been won by other than an Englishman. In the eight Olympiads since 1896, however, only once has victory been wrested from the United States, and then by a Swede.

Long jumping, strictly speaking, should include both running and standing jumps, but as the latter are to-day barely recognised as standard events, discussion of them has been relegated to a brief paragraph at the end of this section. The long jump being the first of the field events proper which we have considered, one may perhaps to advantage attempt to explain the essential difference between competition in field events and track events. Both groups demand always a certain amount of initial ability and talent; both require continued and whole-hearted practice and perseverance for the production of that perfect co-ordination of mind and body which

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alone spells success for the athlete, though this latter factor is perhaps of even greater importance to the field event man than to his brother of the track. For in field event competition a man's co-ordination must be so perfected that his resultant actions are practically automatic, and herein lies the radical difference between these two great branches of the sport. The field event man has no need (with reference to his opponents) for the use of tactics or of judgment. He is a separate entity, and his aim and object is to produce the best effort of which that entity is capable, irrespective of those with whom he is competing. For the track event man, his rivals, their performances, their tactics, their methods, are a very vital concern. They constitute an element in any race which he must fully discount when assessing his prospects in that race. In other words, as an old Cambridge athlete has very aptly put it: "The field event man attempts to perform better than his rival, the track event man to defeat him!" Superficially, this may seem a very fine differentiation, but it does most satisfactorily express the underlying objects of the competitors in either branch of athletics, explaining how, with the identical ultimate end in view—superiority over one's opponents—they approach this end from two essentially different angles.

Returning to the more limited field of the long jump, it should, in the first place, even at the risk of stating the obvious, be pointed out that this event is an essential combination of both running and jumping; but the latter is wholly dependent on the former. This does not imply that the super-sprinter is *pari passu* the super-long jumper, for more is required than mere speed, but it does mean that the man who is essentially a slow runner can never hope to achieve great proficiency in long jumping.

Speed, therefore, is one of the primary requisites in successful long jumping in order that sufficient velocity may be obtained to throw the body forward from a fixed

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point with the maximum momentum to the maximum distance. In this respect it may be observed that an "even time" sprinter can probably record a jump of 21 feet at any time, without any particular effort or concentration on the fact that he is jumping. Besides speed, the long jumper must possess as one of his basic assets natural spring, by which he can apply the momentum gained by the former in the optimum direction. The run and the jump are not two separate entities, they must be merged indissolubly into one smooth, homogeneous whole.

Thus it is ability in these two respects especially that is demanded by this particular field event, but something further is required. This ability must be systematically developed and its component parts so harmonised that perfect co-ordination results, and this means steady perseverance and practice with minute and meticulous attention to all detail over a very long period. The more of an automaton the long jumper can make himself, the more successful will he be.

And here a few words regarding training for long jumping may be in place.

The training will always be long and considerable patience and optimism are necessary. That "Rome was not built in a day" is a maxim which should be carried in the heart of every prospective long jumper. Disappointments are likely to be numerous, and "off-days" uncomfortably frequent, for in many ways long jumping is comparable to golf—its charm lies in its elusiveness. But steady, thorough, persevering practice will undoubtedly bring its own reward in the formation, simply perhaps by a process of time, of the "long jump habit!" Training may be divided into three sections—exercises, sprinting and jumping. Exercises are most essential for the development and strengthening of those muscles, especially of the thighs and calves, which have to stand so big a strain in long jumping, and no actual jumping should even be attempted until a satisfactorily

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loose and supple muscular condition is reached, both by exercises and massage. In this respect it is most highly important that both in training and in competition the greatest care should be taken to guard against cold.

Exercises alone should form the basis of the first week or two of training, and should be continued in modified form throughout the whole season.

Sprinting, in the shape of short bursts of up to 50 yards, and of medium-pace work, well up on the toes, should be the long jumper's only activity for the next three weeks or so, and should always form a preliminary to his jumping practice. The importance of this initial period of running pure and simple is the development of a perfectly regular stride, which later becomes such a vital matter in ensuring a successful run-up. Actual jumping practice itself should, therefore, not be commenced until about a month after the beginning of training, and should be limited to five or six jumps a day at the most. The details of the jumping training will be considered under the discussion of those various parts of the long jump into which it can be divided.

These are the Run-up, the Take-off, the Flight and the Landing.

The Run-up.—H. M. Abrahams is responsible for a very true saying in regard to long jumping : " Take care of the run-up and the jump will take care of itself ! " This serves to show the vital importance of the first part of the jump. We have already pointed out that one of the primary requisites in the long jumper is speed and the ability to develop this relatively rapidly, and that a good sprinter can produce a jump of over 20 feet on speed alone. But it is not simply speed in the unqualified sense of the word that is required, it is a speed productive of such a uniformly regular acceleration that when the critical moment of the take-off arrives the body, besides having been given its greatest possible velocity, still maintains perfect co-ordination, allowing of complete

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steadiness and balance. It is this combination of speed and steadiness which lies at the bottom of all successful long jumping. In other words, there is an optimum rather than a maximum velocity to be obtained in each particular case, and the man who reaches the take-off board in the shortest time, but so fast that he tends to wobble, to strain, to lose his balance or to "jump off" away from the straight, is not going to cover as much ground as the man who is a shade slower in his run but maintains perfect body control. This explains why, though the good sprinter can almost automatically clear a fair distance, he is not necessarily the good jumper, for without considerable practice he will lack the knowledge of how to adapt his speed in such a way as to ensure steadiness. In fact the ultimate object of training is to make the optimum and the maximum speeds for the run-up approximate, to as great a degree as is consistent with good balance. Since, therefore, one is really aiming at developing one's greatest useful speed, it is necessary that the run-up—which, incidentally, on all good tracks to-day is a narrow cinder path some 4 feet in width—should be about 50 yards in length, as the minimum distance in which it is possible to attain this maximum speed is for by far the largest majority of men from 35 to 45 yards.

Between these limits each individual jumper must find his own particular distance. And this brings one to the kernel in the nut of the run-up—namely the production of a perfectly regular, standard, uniform effort. The run-up should become absolutely mechanical, an automatic effort, to such an extent that the jumper has perfect confidence in his ability to strike the take-off board fair and square ten jumps out of ten. How is this highly desirable result to be produced? Only by much painstaking effort, careful attention to minute detail, and persevering practice.

The first essential in training for the run-up is the three to four weeks of short sprinting practice mentioned

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above. This ensures a perfectly regular length of stride being developed, and when this stride has become to all intents and purposes a habit, then a consistent and smooth approach to the take-off board is guaranteed. When this stage has been reached, the problem then arises for each individual jumper of discovering the particular point for him at which he must start his run-up. This point should always be the same distance from the take-off board, allowing for average normal conditions. It is only after considerable experience that due allowance can be made without several preliminary trials for abnormal conditions such as the state of the track, especially in wet weather, or the presence of a following or head wind, or the degree of physical fitness of the individual competitor himself.

As to methods of finding this point, the following two, really but variations of the same idea, are those most frequently used. Starting with that foot on the take-off board from which one naturally jumps (it matters not whether it be right or left, provided it is always the same foot), the back being turned to the long jump pit and the heel of this take-off foot level with that edge of the board nearest the pit, one starts to run, using as far as possible the regular stride developed in the period of sprinting practice, until some forty odd yards have been covered. About this distance a point is marked where one particular foot comes down. Then, starting from this point and off this foot, the distance is run in the reverse direction, taking the greatest care neither to "reach" for the board by lengthening the last stride or strides nor to shorten them in order to hit it fairly. If, running right through with even, regular strides, one does not hit the board properly, then it is a matter of advancing or putting back the marked point according to whether the take-off foot is short of or over the board. The alternative to this method is simply to choose a point at random, some 40 yards from the board, and, noticing the result

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of the first run through from this point, adjust accordingly as before.

When, however, by one or the other method the correct point has been found, it is well worth while measuring this distance accurately, using the tape measure with which every jumper should be provided, as it will then always be a basis from which to start one's practice, or the "trial run through," one at least of which should always be taken before actual competition.

The other point to bear carefully in mind is the foot from which one started on this mark—and to make sure there is no mistake about this, some long jumpers begin their run-up from the customary crouch start of the sprinter, which always ensures one particular foot being to the fore.

In competition, if this method is not used, the usual procedure is to place some distinctive mark at the side of the track opposite the set point, and starting a few yards behind this, make sure that one begins one's full striding from this point and off the correct foot. Some jumpers use another similar mark about half-way through their run-up, which is opposite a point they know a certain foot should strike. If they are wrong by the time they reach this spot, they know they will in all probability be wrong when they finish the run, and hence it gives them time to pull up before reaching the take-off board and so avoid a possible "no jump." This is adjudged by whether any part of the foot passes over either the edge of the take-off board nearer the pit or a line extended from this edge on either side of the board.

There are those, however, who deprecate the use of this second mark on the grounds that to watch it tends to upset the normal run through. This is a matter which the individual must decide for himself.

There is one slight modification permissible to the well-trained jumper in the dictum that the run-up must consist of perfectly regular, even strides, and this is that the last stride or two of all should be a shade shorter than

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their predecessors, to allow of an effectual "gathering" of the body for the coming spring of the jump itself. Any other departure from the normal striding—the series of rapid "chop" strides at the end of the run, the almost pathetic reaching out strides which form the so-called "feeling for the board," the run-off to the side of the board—all these are distinct faults, and evidence of insufficient practice—practice which has not been enough to make the run-up the absolutely mechanical factor it should be in long jumping.

The Take-off.—The take-off is the half-way house between the run-up and the jump proper, and it should constitute the merging imperceptibly of the one into the other—the apparently effortless translation of the cause of velocity and momentum into the result thereof. If any hesitation occurs at the moment the run becomes a jump, then there are still faults to be eradicated.

The take-off board (according to A.A.A. Rules) is a piece of hard wood, usually deal, 4 feet long, 4 inches deep and 8 inches wide, buried so that its upper surface is flush with the ground, and painted white. Thus it is from this 8-inch surface that the actual jump takes place; and it is vital that the take-off should occur from this surface, not only because anything beyond it constitutes a "no jump" and anything behind it an obvious loss of possible distance, but also because the resistance offered by the wood permits of the development of the optimum amount of spring. The real object of careful training in the run-up is to ensure that the whole ball of the foot strikes this board fair and square every time. It is here that there occurs the transference of weight from heel to toe, and it is here that there is added to the momentum produced by the run-up the element of "spring" which provides for the upward and hence directs the subsequent forward movement of the body. For there is an optimum angle at which the body should be despatched—namely about 45 degrees from the horizontal. (This will be further discussed in the next

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section.) At the same time as the spring takes place from the take-off foot and leg, the body is generally gathered up into compact form, and the arms thrown up and forward, thus bringing into action every propulsive force possible.

At the moment of change from run to jump, a considerable strain is thrown upon the muscles of the take-off leg; and considerable force upon the take-off heel. It is to lessen these that the jumper's shoes are provided with a pair of heel spikes—and it is often of advantage to supplement these with a rubber pad inside the heel of the shoe to prevent the excessive jarring which is apt to occur, and obviate the chronic inflammation of the bone of the heel which is such a common sequel.

In training for this particular part of the jump, the practice of spending a considerable time early in the season simply at first with standing jumps, and later with the shortest of runs-up, *e.g.* about 10 yards, has much to be said for it, in that besides developing the all-essential “spring” it helps to give one that very necessary “feel” of the board which means, later, confidence, and that, in turn, success.

Flight.—The period occupied by the actual jump is so brief, on an average about one second, that the amount of conscious effort possible in the limited time—especially in competition—is almost negligible, and in the truly trained and experienced long jumper should be practically non-existent. But the fact that one aims at making the flight a purely automatic effort in competition does not mean that it can be performed anyhow. There is a very definite optimum course along which the body should travel, and also a very definite optimum position it should take up while travelling. Much of the success of this part of the jump depends upon those that have gone before, as has to some extent been pointed out previously. The run-up has provided speed, and, at any rate as important, it has also developed balance and steadiness—and it is this latter element, if successfully transferred

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through the take-off, that goes to make or mar the jump as a whole.

If, whilst in the air, the arms or the legs or the body as a whole have to be moved in various odd directions in an attempt to maintain balance, the inevitable result is loss of distance. It needs much practice, too, before the "gathering up" of the body from the take-off board can be successfully accomplished without disturbance of equilibrium. And one other further factor which is all-important in the flight is gained from the take-off board, namely that spring which leads to the height so requisite to the production of good distance. It has been estimated that the man who clears 23 feet reaches a height of some 5 feet at the top of his flight, whilst those who jump in the world's record class of 25 feet and over must be achieving the no mean feat of being as much as 5 feet 9 inches above the pit at the apex of their flight!

This question of sufficient elevation is of vital importance, for exactly as in throwing a cricket ball in to the wicket from the boundary one throws it in an upward direction to procure maximum distance, so must the long jumper—who, as will be pointed out shortly, conforms to the shape of a human ball—go up whilst he goes forward if he is to produce his best. And in actual jumping training it is this acquisition of sufficient height that must be assiduously practised. Some prefer to practise simply by concentration on "getting high" after taking-off, but perhaps the majority are best advised in this part of their training to resort to some additional aid. This usually takes the form of two light poles planted one on either side of the track, some definite distance from the take-off and between which is stretched a piece of worsted at a definite height above the ground. With regard to this distance and this height, an average for an adult long jumper is some 14 to 15 feet from the take-off, and about 3 feet 6 inches to 4 feet for the height of the worsted. In the early stages of training, of course, both may conveniently be less—and

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then gradually increased until the maximum distance consistent with steadiness is arrived at. The practice of substituting a low hurdle, however light, for the worsted is not one we recommend, in view of the obvious attendant dangers.

The body during the flight, as we have said, should be as much the "human ball" as possible. The course taken by this "ball" is a parabola, with a long gradual rise, and then, as momentum is lost, from air resistance and the pull of gravity, a relatively quicker fall. To



FIG. 13.

reduce this loss of momentum to a minimum the body during its flight should, to lessen the resistance of the air to it, be rendered as compact as possible.

The accompanying Fig. 13 depicts a jumper just at the apex of his flight (approximately some 5 feet

above the pit), and the form shown is well-nigh perfect. The legs are gathered up against the body, so that the knees almost touch the chin; the arms have been thrown up and well forward; the head is forward, and the eyes are focussed on that spot in the pit on which it is hoped to land; the feet are well together; and the whole picture exemplifies that retention of momentum for the greatest possible time which should be the aim and object of every long jumper.

There is one other outstanding "style" in the flight, which finds much vogue in America and has not a few adherents in this country, and that is the so-called "hitch-kick" style, in which the legs are made to perform several rapid kicks during the time the jumper is in the air (*see* Fig. 14). The supporters of this

LONG JUMP

method claim that by this means it is possible to give the body in its passage through the air an added impetus, and a higher position relative to the parabola of flight for its centre of gravity, while others explain it as simply a maintenance of the run-up action continued through uninterruptedly into the air. In this method the hands tend to be flung up above the



FIG. 14.

head (*see* Fig. 14), a fault which, incidentally, may be present in any jumper, whatever his style, but is nevertheless obviously a fault at all times since as soon as the arms pass the horizontal they must automatically become a retarding force. If it is intended to maintain also the steadiness and balance engendered by a good run-up, it can only be said that the results hardly seem to justify the belief, whilst the idea of a fresh stimulus to momentum is hardly one which will find the support of

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any student of mechanics. The point with regard to the raising of the body's centre of gravity is the only part of the theory which holds water. Altogether, despite the fact that this style has been employed by some of the best long jumpers the world has known, one cannot find apart from this one suggestion adequate basis in the theory of it to warrant its adoption by the average long jumper.

Landing.—With regard to the final stage of the jump, where the jumper once more comes to earth, there is but little to be said. The principal point to stress here is the shooting forward of the legs immediately previous to landing. By this means it is possible to add another good 6 inches or so on to the length of the jump, but it must always be done bearing in mind the one basic principle of long jumping—good balance, which it is just as essential to maintain right up to the end as it was to produce it in the initial run-up. For over-reaching and consequent loss of equilibrium will produce that most disappointing of all results, a falling back into the pit behind a good distance as achieved by the feet. On the other hand, if, on landing, the jumper tends to fall forward with any force, he may be sure that he has come down too soon, that he has not jumped high enough to permit his store of momentum having had sufficient time to expend itself. The landing should be made with the feet well together and at a point which has been fixed by the eyes from the top of the flight. To assist in this “reaching out” for a good result, both in training and in competition, many jumpers adopt the practice of placing a piece of white paper in the pit at the point on which they hope to land—a practice which has much to recommend it, providing the point is one which does not demand an impossibility from the individual concerned.

Section 1A.—Standing Long Jump

As has been mentioned above, this event does not figure in many present-day programmes, but it still finds

HOP, STEP AND JUMP

a certain amount of favour in America (particularly in indoor athletics) and perhaps more in Ireland and certain Continental countries. It was included in the second Olympic programme (Paris, 1900) and retained until the 1912 Olympiad at Stockholm, since when it has been dropped. Three of these four Olympic contests were won by America—the fourth by Greece—and all the American victories were, incidentally, by the same man, R. Ewry, who in one of them established the world's record for the event of 11 feet $4\frac{7}{8}$ inches.

It has never been an A.A.A. championship, and as far as is known is not practised at all in this country.

The event may be looked upon as simply the running long jump bereft of its run. In other words, the velocity factor is completely removed, that of spring being of paramount importance. The feet may be placed in any position at will on the take-off board, but they must only leave the ground once, when the actual jump is made. "Rocking," or swinging alternately from heel to toe, is, however, permissible; and it is by this means, together with an exaggerated arm swing and an ultimate crouch, with bent knees and tensed body immediately before the jump is made, that the requisite momentum is produced.

The jump, once the take-off has been made, *i.e.* the flight and the landing, corresponds exactly with what has been said above with reference to the running long jump, except that the hitch-kick style has never yet been used during the flight.

Section 2.—Hop, Step and Jump

The hop, step and jump is a somewhat anomalous event which cannot honestly be said to find a great deal of favour in either the athlete's or the public's eye. It was only in 1914 that it was raised to the honour of being an A.A.A. championship, and as far as we know this and the District Championships are practically the only meetings in this country in which it features on the

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programme ; and as of the nine championships held up to date five have been foreign victories, everything seems to point to the fact that, in England at any rate, its following is very small. In some form or other, however, it has been an Olympic event since the first games at Athens in 1896, and has once been won by an Englishman. The honours in the remaining seven contests have been shared by no less than five other nations, which may, perhaps, indicate a more general interest in the event than is evidenced in this country. It is of interest also to note that the present world's record is held by a Britisher in the person of A. W. Winter of Australia, who established the distance of 50 feet 11 $\frac{1}{4}$ inches in the 1924 Olympic Games in Paris. The best English performances are some 4 to 5 feet short of this mark.

There appear to be two almost completely dissimilar types of athlete who favour this event—the long, loose-limbed type with good shoulders and strong back, as exemplified by Winter, and the short, stocky “rubber-ball” type with well-muscled legs and a superabundance of spring, well typified by the Japanese, Oda, last year's (1928) Olympic winner.

The event itself partakes of many of the characteristics of the running long jump, and the majority of the observations that have been made previously about the latter will apply equally to the hop, step and jump. The training should be on exactly similar lines—exercises, sprinting and actual jumping—and the principles of the run-up and the take-off will be identical in both cases. After the take-off, the name of the event indicates fairly clearly its component parts. The hop is a leap from the take-off foot on to the same foot ; the step from that foot to the opposite one ; and the jump from this second foot on to both feet—this final stage being in the nature really of a pseudo-standing long jump ; “pseudo” because there still remains, despite the interruptions in movement at the take-off, at the end of the

HOP, STEP AND JUMP

hop and the end of the step, a certain amount of the original momentum generated by the run-up.

As in the long jump the imperceptible merging of run into jump was stipulated as the essential for perfection, so in the hop, step and jump, but three times over !

If the attainment of change of movement without appreciable loss of velocity was the difficult problem in the long jump, how much more difficult are the three changes of the hop, step and jump. And yet herein lies the secret of success in this event—the production of the maximum continuity of action throughout its three component parts.

This demands primarily good speed in the run-up, and then the element of “spring” which may be said to be required in two forms—the passive and the active—in the subsequent movements. By this is meant that for the hop and the step, spring to produce height is not so necessary as in the long jump proper, but spring to make the contact with the ground at the end of these two stages as light as possible, to compensate to as great an extent as possible for the resistance of this contact, this is important, and this one has termed “passive” spring. It is the sort of elastic touch which enables the performer to bound smoothly from one stage to the next with the minimum loss of momentum. Coming to the final stage of the jump, here, of course, just as in the long jump, active spring is required to send the body forward at the optimum angle and to the optimum height for the production of the maximum distance, and in view of the fact that the jump starts from an actually much slower take-off having been automatically retarded by the previous hop and step, relatively much more spring is needed.

With regard to the proportion of energy that must be put into the three different parts, the consensus of opinion seems to be that they should be gradually increasing efforts. To reach 50 feet, the hop, step and jump should, respectively, be about 13 feet, 16 feet and 21 feet. This reckoning is rather on the “bouncing

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ball " basis, and is actually the result usually produced by the smaller type of jumper in this event. Another school maintains that the hop should be a greater effort than the step (*e.g.* the reverse of the above, the former being 16 feet and the latter 13 feet), the idea here being that by so lengthening the hop as to be able to shorten the step, without actual loss of distance, it is possible to allow of a better gathering up of the body preliminary to what, in either method, is *the* great effort, namely the jump.

It will easily be realised that the muscular strain in this event is very considerable, and heel-spikes an essential, whilst the rubber pad in the heel of the shoes of both feet is to be even more strongly advocated than for long jumping. Exercises to strengthen leg and foot muscles are exceedingly important in this event, as are those which aim at procuring that steadiness, balance and co-ordination which relatively are of even more vital concern here than in the long jump.

Section 3.—The High Jump

By C. T. VAN GEYZEL

Nearly every great jumper uses an acquired form or style of jumping which appears more or less unnatural. Natural ability—spring, suppleness and strength—may carry a jumper over a considerable height, but really great heights have only been cleared by men who, in addition to possessing natural gifts, have paid very careful attention to acquiring a scientific and economical style.

It must be definitely stated here, however, that there is no set and definite number of movements which must be performed if success is to be attained. Great performers have all of them mannerisms, individual and peculiar to themselves. What they do have in common is this, that they observe certain fundamental principles on which the clearance of great heights depends.

There are three main forms of jumping, of which that known as the "scissors" form is the oldest.

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The athlete using this method approaches from the right side. (It is assumed that the jump is made from the left foot.) His take-off leg, the left, is the leg farther away from the bar. The right leg is swung up and is followed by the left. The body is held upright and the jumper is in a sitting position over the bar at the time of clearing it. The height reached is determined by spring and the swing of the legs, but it is apparent that the rigid, seated position over the bar does not allow of free leg swings. There is no body turn or "lay-out"—that is, the body is not flattened out into a horizontal position at the moment of clearance—nor are the hips twisted clear of and swung away from the bar. The style has obvious limitations. A form which does not employ a "lay-out" cannot be economical, for an upright carriage necessitates lifting the body through too great a height, and must be wasteful of strength and energy.

The style which grew out of the old "scissors" form improved very considerably on it, eliminating its disadvantages, employing a more or less complete lay-out and incorporating a body turn and leg action which swing the hips away from and clear of the bar. This style is known as the "straight-over" or "Eastern" form.

The third main form of jumping is the "Western" form, or roll as it is sometimes called.

The jumper using this form takes off from the foot nearer to the bar—a left-footed jumper approaches from the left side at an angle of about 45 degrees. At the moment of clearance the body lies right along the bar, complete "lay-out" being employed. It is the most economical of all the styles and has been used by those jumpers who have cleared the greatest heights.

The Western form of jumping is hardly practised in Europe, where it has been and still to some extent is regarded as a style of rather doubtful fairness. The Western "roller" it is believed "dives," and there is a widespread belief that he depresses the bar to below

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the nominal height and holds it on with the arm that goes over the bar first. This arm is undoubtedly flung downwards to help the lifting action of the hip and may come in contact with the bar ; but it is unlikely that it is deliberately used for the purpose of keeping the bar on the pegs. That would seem to call for an improbably high degree of skill, taking into consideration the very short time in which the whole action of the jump has to be completed. In any event the style is recognised and has been used with great advantage by notable performers from the United States, and there seems little doubt that it will very shortly be practised more widely by jumpers in Europe.

In this chapter a detailed description first of the straight-over jump and then of the Western form will be attempted.

The Straight-over or Eastern Form.—It will be assumed throughout that the jumper springs off his left foot. The left leg will be referred to as the “take-off” leg, and the right leg, the leg which is kicked up first, as the “leading leg.” A jump may be split up into three parts : the run-up and take-off, the swing up to and action over the bar, and the landing.

The run-up and take-off are of extreme importance. The correct take-off position is determined by standing in front of the bar and swinging the right leg up straight, and past the bar. If the take-off foot is on the right mark the right foot should just miss kicking the bar in the upward swing of the right leg. Maximum results cannot possibly be obtained unless the jumper takes off from absolutely the right spot. If the spring is made from too far away he will reach his greatest height in front of the bar and will be dropping at the moment of clearance. If, on the other hand, he takes off from too close in, he will not have enough room in which to perform the action of the jump truly, and will displace the bar on this upward journey. It cannot be too strongly stressed that the only correct take-off mark

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should be just that distance away from the bar which will enable the jumper to reach his greatest height in the air at the precise moment when he clears the bar.

When the take-off position has been ascertained the jumper has to fix on the length of his run. This will vary with the individual. The run should not be too long, but just long enough to enable the jumper to work up the speed that suits him best and to gather himself comfortably for the spring; 10 to 15 yards is generally considered sufficient.

An easy paced, confident, springy run is to be recommended. Too slow a run will not provide enough forward momentum to carry the jumper over and across the bar, whereas if the run is made at too great a speed, the jumper will not be able to convert forward momentum into height and will jump into the bar. In any event too great a distance would be covered and height lost.

Experiment will show each man the speed that suits him best. The jumper who has great strength of leg and can check his forward momentum by a vigorous stamp of his take-off foot will be able to approach the bar at a more rapid rate than one who has not the necessary leg strength.

The body should be leaned forward slightly during the run up, so that it will be directly over the take-off foot when the spring is made. Some jumpers, however, especially those deficient in natural spring, hold their bodies more upright when taking off, because they rely on the power of the upward kick of the legs, especially that of the leading one, to gain height, as an upright carriage enables them to kick the leading leg up more freely.

The jumper who is not sure of taking off correctly has a tendency to draw back from the bar when approaching it, with the result that the body leans backwards and is not directly over the take-off foot when the spring is made. This robs the stamp of the take-off foot of its effectiveness. Experiment will

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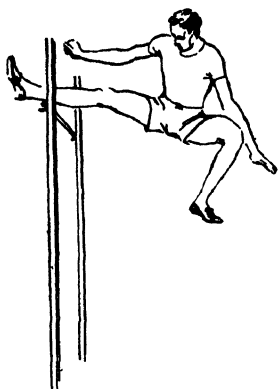


FIG. 16.—Leading Leg Over.

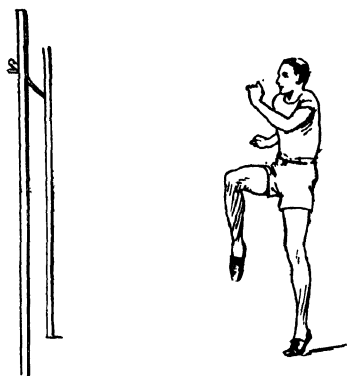


FIG. 15.—Take Off.

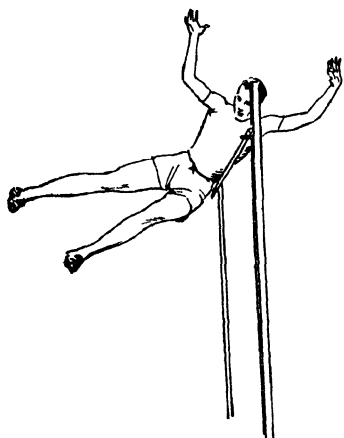


FIG. 18.—Turning.

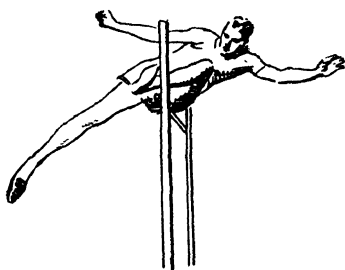


FIG. 17.—The "Lay Out."

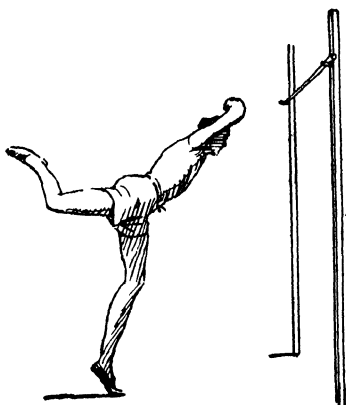


FIG. 19.—Landing.

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convince that a stronger spring can be made when the body is directly over the foot off which the spring is made.

In making a jump the heel of the take-off foot is thrust down hard and the spring is made off the whole foot from heel to toes, the knee being slightly bent. As the spring is made the right or leading leg is swung up straight and hard and slightly towards the left. The arms support the rise of the body, being flung upwards, the right arm coming slightly across the body towards the left, starting a body turn. When the right leg is clearing the bar the left is swung up powerfully, fitting smoothly into the lifting action. After clearing the bar the right leg is swung and pivoted towards the left and downward while the left continues its swing. When the left leg reaches maximum height the body is leaned backward and in towards the left while the arms aid the turn and lay-out. The turn and lay-out will swing the hips clear of the bar, and the action of the left leg, which is cut back and downwards, further helps to swing the hips free and completes the turn. The landing is made on the left foot and the jumper should face the bar at the moment of landing.

In the style just described it is important to swing the leading leg up as high and straight as possible, for the height attained depends largely upon this. The swing of the take-off leg supplements the lifting action of the leading leg. The upward swing of this leg and its subsequent backward and downward kick, together with the arm action and body twist, make the lay-out possible.

The Western Jump.—The Western form differs from all others in that the spring is made from off the foot which is nearer to the bar. The jumper approaches from the left side at an angle of 45 degrees. He takes off from his left foot and swings his right up hard and parallel to the bar. The left follows the right rapidly and powerfully. The left arm is extended over the bar and the body held more or less upright. When the right leg is above the left and about level with the bar

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the body is snapped into a full "lay-out"—that is, is parallel to the bar. The right leg is stretched out fully and the left bent at the knee and tucked under the right thigh (see Figure 20. Position of H. M. Osborne, world's record holder, at the top of his jump.) At the moment of straightening out, the body is turned or rolled over towards the left and lies on its left side. This turning motion is aided and accompanied by the

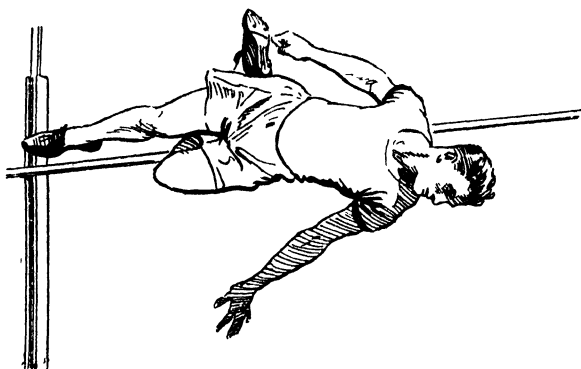


FIG. 20.

movement of the left arm, which from its extended position is swung down and in towards the body. The head, which is carried low, is turned towards the left at the same time. The action of head and left arm help to lift the left hip up and clear of the bar. When the turn is completed the jumper drops into the pit, landing face downwards on hands and foot.

In this form the right leg and side clear easily and are never likely to hit the bar, while the left side is pushed up by quick-lifting action of the left leg.

Some jumpers, instead of making the turn when they straighten out into the "lay-out," start it soon after the moment of taking-off. The style is not easy to acquire. The movements must be well timed and must fit in perfectly with each other. It requires much practice and careful attention to detail.

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Taking-off from the inner foot does not come by any means naturally to a jumper. There is always the fear of hitting the bar with the nearer side, especially as the Western jumper needs to take-off from close in. Then there is the undoubted tendency to lean back while taking-off, in the attempt to start a "lay-out" early, thus lessening the effectiveness of the spring. The novice would be well advised to keep his eyes on the take-off mark. In addition to the advantage mentioned, namely that there is no danger of hitting the bar with the right leg or side, there is this further advantage, that the Western jumper "lays out" completely, whereas in the straight-over jump more than a three-quarter "lay-out" is rarely obtained.

Men have used the Western roll to clear heights of over 6 feet 6 inches, and Harold Osborne, the United States Olympic jumper and world's record holder, has used it to reach 6 feet 8½ inches. It is not probable, however, that such a height will ever be reached again, because the Western jumper has a tendency to hit the bar with his left arm and to come down on it with his left thigh. The old bar, which could only come off the pegs one way, *i.e.* into the landing pit, was not easily displaced by a jumper pressing it down and against the uprights. The new method of balancing the bar on the pegs has removed this advantage, because it can be pushed off into the run-up as well.

It is not possible to state that one style is superior to the other, though the Western roll is perhaps the more economical. Men are not built alike and have preferences. The novice will soon find out for himself the style which he could develop with the greater success.

Those choosing to perfect the straight-over form can certainly draw encouragement from the fact that many men have used this style in clearing heights of over 6 feet 3 inches. R. W. Landon, an Olympic champion from the U.S.A., used it to clear 6 feet 4 inches. It has been employed with great effect by Pierre Lewden of

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France, one of the greatest jumpers the world has seen. A man of small stature, he has been over very nearly 6½ feet. The case of Lewden and other great performers who have not possessed the undoubted advantage of height leads naturally to the conclusion that height is not an essential qualification. Spring, suppleness and nervous strength and energy are more important qualities than height pure and simple.

Training.—The high jump is a strenuous event and one in which all the muscles of the body are called on to play their part. The entire body should, therefore, be strengthened and brought to a high state of fitness. Body exercises are of the greatest value, particularly those which strengthen the muscles of the waist and back. Nor should arms and shoulders be neglected. They should be strengthened by light, quick exercises. Heavy work which tends to stiffen should be avoided.

The jumper requires toughness of muscle and at the same time has to be supple, and needs to preserve elasticity. Walking as preliminary training cannot be bettered. Walks should be fairly long, taken at a comfortable speed, and broken up by short runs. Slow jogging on the track too will be found beneficial, but on the approach of the actual competitive season all work which would tend to slow one up should be avoided. Exercises, such as heel raising, and foot twisting exercises which strengthen feet, ankles and the arches of the feet, should be practised. High-kicking and stretching exercises, such as standing upright and then bending forward to touch the ground with the fingers, keeping the knees unbent the while, are of great use.

Practice.—The novice should spend time and care in perfecting his run-up and making certain of hitting his take-off mark. He should then pay attention to perfecting his form. He should concentrate on individual jumps, making each one as carefully and perfectly as

HIGH JUMP

possible. Bad habits come through carelessness, and once acquired they are not easily got rid of.

A common fault is not taking-off from the right place over low heights, and using more strength than is necessary in clearing them. The importance of the approach and take-off cannot be exaggerated. Lack of care in perfecting them has destroyed the chances of many men who might have reached championship heights.

If a coach is not available it is advisable to have a friend by one during practice, to point out faults. The observer should give each detail in the action of a jump individual attention. He should watch the line of the run-up, the exact spot from which the spring is made, the swing of the legs, the position of the body and the carriage of the arms. Attention should be paid to the way in which the take-off leg is thrust down. The heel should be stamped down hard and the whole foot from heel to toes used. Through hurrying themselves jumpers often fail to thrust the taking-off foot down fully and fairly, and instead take-off from just the outside of the foot.

It is advisable to jump at low heights till form is acquired, and then to try for height in order to gain confidence. One should not try for height more often than once a week, however, as a big effort breaks down spring. When a jumper becomes fairly sure of himself he could with advantage reserve big efforts for competitions, provided they are not too infrequent, and content himself with a few jumps over a height which he can clear fairly easily. After a certain point in proficiency is reached actual jumping ceases to be an important part of a jumper's training. He should aim instead at maintaining strength and suppleness of muscle and at being full of spring and the desire to jump on the day of competition. To this end it is absolutely necessary that all work during the competitive season should be light and quick, and that the jumper should rest

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completely for two or three days before each important competition.

Competition. — The jumper should arrive on the ground early enough to give him time to "limber-up" carefully. He should make himself warm and loose by running and going through loosening and stretching exercises. Experiment will show each man how much limbering-up he needs and what period of rest between the limbering-up and the competition suits him best.

The jumper should measure or pace out his run-up just before the competition, and then rest comfortably and warmly wrapped up till the bar is up at the height at which he intends to start in. It is a mistake to start in too early. Many jumpers do this through lack of confidence, but a little experiment at practice should accustom a jumper to start in at what is for him the right height. A man who warms to his work and jumps best at his sixth jump should so arrange it that that sixth jump shall be as near the deciding jump as possible.

Muscles should be kept warm in between jumps. Cold muscles mean a loss of elasticity.

The jumper should avoid a cramped or uncomfortable position while resting between jumps, and should unlace his shoes after each jump. A tight shoe interferes with circulation.

It is advisable to perform one or two lazy stretching exercises before jumping, and if the day is at all cold to have a light limber-up between jumps. Each jump should be made as well as possible, and the jumper should concentrate on his own jumping and not mind the form of other competitors. If he should fail at any height he should take time in order to rest and collect himself before making his second attempt.

The excitement of a long-drawn-out competition often makes the mouth and throat uncomfortably dry. It is therefore wise to take a bottle of water out to the field with one.

STANDING HIGH JUMP

Section 3A.—Standing High Jump

This event is really no longer recognised amongst standard athletic competitions. In pre-War days it had a considerable vogue both in America and on the Continent, and is still to some extent practised in the former country (in indoor sports particularly) and in Ireland. From previous records and statistics one gathers that in Great Britain the standing high jump has never at any time found much favour, and it has never been granted A.A.A. championship rank. In the Olympic Games, however, it found a place from 1900 to 1912, but has not featured in Olympic programmes since the War. In the four Olympiads in which it was held, it was won on each occasion by America, the first three victories (1900, 1904, 1908) standing to the credit of one man—R. Ewry—who, as has been mentioned previously, established a similar record in the sister-event, the standing long jump. His best effort in this series was 5 feet 5 inches in Paris in 1900, and this height stood as the world's record for the event until 1913, when it was eclipsed by a compatriot, W. Goehring, who then cleared an extra three-quarters of an inch.

Obviously, success in the event depends upon the amount of spring possessed by the jumper, and it is interesting to note that the added factor of run-up—*i.e.* momentum—as occurring in the running high jump, accounts for no less than $14\frac{1}{2}$ inches in the difference between the world's records for these two events.

Apart from spring, technique is, of course, as important as ever, the "scissors" style and the several variations of the horizontal or "rolling" method being all employed. The rules for the event simply stipulate that the jumper's feet must leave the ground once only, though "rocking"—alternate lifting of the body weight from heels to toes—is permissible. This rocking movement, combined with a good arm swing and an initial semi-crouch or gathering-up of the body immediately previous

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to the actual jump, are the only points of particular interest, apart from the actual methods of clearing the bar, which correspond exactly with those described above for the high jump proper.

The man who excels at this event is usually tall, with powerful cleanly-cut muscles, and possessed of an exceptional degree of natural elasticity and spring. Such a type is well exemplified in J. E. London (the Polytechnic Harrier sprinter and jumper), who—though as far as we know he has never competed in an actual standing high jump competition—put up a remarkable performance in 1927 in the match A.A.A. v. Cambridge University, when he comfortably cleared 6 feet 2 inches with a run-up that literally consisted of only three very slow paces !

Amongst training exercises hopping on the toes, either off both feet together or off each foot separately, is one of the most valuable exercises.

Section 4.—Pole Vault

There seems to be a very prevalent idea amongst followers of athletics in Great Britain that the pole vault is a comparatively new field event—almost that it is a post-War innovation. This is, of course, quite a misconception, and is probably due to the unfortunate lack of interest in this particular event in this country, which was so noticeable until a few years ago, since when one has been glad to observe a most encouraging recrudescence in the appeal of the pole vault both to competitor and spectator alike. Historically, it is of interest to note that the Fell men have practised this sport for very many years, whilst in the Fen country it has also been known for ages, having been put to the utilitarian purpose of crossing ditches, *i.e.* a pole broad jump ! Actually the event is of long standing in the A.A.A. championship programme, having been established in 1866, when this meeting first became an organised

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concern. The pole vault championship has therefore been competed for some sixty times, and though nearly forty of these have been English victories, only two or three of these forty have occurred since 1900! It has been a standard event in every one of the eight Olympiads held to date, and in every one of those eight pole vault competitions Olympic honours have fallen to the prowess of American athletes. There is little doubt that to-day the United States is the home of the pole vault experts. And the world's record also is held by an American, Lee Barnes, who cleared 14 feet 1 $\frac{3}{4}$ inches; but the general English standard after originally leading the way to the 11-foot level, where it remained for many years, is now again steadily advancing towards the 12-foot mark. It is also a healthy sign to note the embodiment of the pole vault in the Oxford and Cambridge Sports programme since 1923, and its adoption by the public schools sports organisers since 1925.

The latter fact is of particular importance, as it is from those schoolboys of to-day who have received satisfactory tuition in the somewhat difficult technique of this event, and have, prior to leaving school, developed at any rate the rudiments of style, that one may hope for the first-class exponents of the future. The event is essentially of such a complex nature that it demands anything up to four or five seasons of what is really little more than steady, careful training before results of any real merit can be produced. And hence, if these years can be spent at school instead of, as has too often been the case until quite recently, during the full maturity of a man's athletic career, one can with reasonable hope look forward to England producing vaulters of really first-class standard before many more years have elapsed. And this should most certainly be striven for, because the pole vault is a good event in every sense of the word. It has been accused of being rather more acrobatic than purely athletic, but even though admittedly the former element may come into

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it, yet it still demands all those essential attributes, except, perhaps, speed, which go towards making up a successful field event. It is most certainly also a highly spectacular event, and though the public generally may not yet be capable of appreciating the finer points of the technique concerned, there is no doubt they thoroughly enjoy it as a sight.

Though heavy men and tall men—in fact all sorts of men—have met with considerable success in pole jumping, the type which appears to predominate is the rather shorter, well-knit, often almost “stocky” type, with a good breadth of shoulder and strongly developed arms. And in this respect the event is, in its way, unique, for apart from the throwing events it is the only one in which arms and shoulders rather than legs and hips are called upon to make the essential effort. For this reason the best training for pole jumping, apart from actual jumping, is to be found amongst those many weird and wonderful devices which constitute the equipment of any well-fitted modern gymnasium. And much—at least a month—of this sort of work must be done before anything more strenuous than the lowest of practice vaults is attempted. The rest of the pole vaulter’s training should consist of mild sprinting practice, of gaining experience in running easily carrying the pole, whilst exactly as with every other form of jump, actual practice over the bar should be limited to a maximum of five or six attempts.

A.A.A. Rules state that the pole, as used in this event, may be of either wood or bamboo, but the latter is almost exclusively the material chosen to-day. This is chiefly because it has been found that the bamboo pole stands relatively much more strain than the wooden one, especially if, as is permitted, it is bound with adhesive tape, which latter, incidentally, is also of great assistance to the jumper in allowing a much firmer grip to be taken. Furthermore, the bamboo pole has a longer life on the average, and (perhaps most important of all) bends rather

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than breaks when its life is eventually ended, so offering much less risk of any serious accident resulting from this mishap. Poles may be of any length and any diameter, the average measurements for these dimensions being about 14 to 15 feet and $2\frac{1}{2}$ to 3 inches respectively. In the choice of a pole, however, more important factors than these are its weight and its balance, the true values of which can only be properly assessed by men with considerable experience in the event.

The uprights, which are at least 12 feet apart, and cross-bar are similar to those used in high jumping, except that the former are fitted with various devices by which they may be extended to the greater heights attained by the pole vaulter. Unlike the conditions in high jumping, however, it is permissible for a competitor to have the uprights moved during competition, provided this movement be not more than 2 feet in any direction. The take-off in pole vaulting is made by running the pole into the so-called "take-off box." This "box," placed immediately below the centre of the cross-bar, consists essentially of a block of wood some 6 inches thick and buried 2 feet deep. From about 2 feet 6 inches in front of this board a slope approximately 18 inches wide extends down from the level of the run-up track to a vertical distance of about 9 inches on the back board. The point of the pole is thrust against this board when the take-off is made.

The landing pit for the pole jump should be a semi-circle, with its centre at the take-off box, and at least 14 to 15 feet in diameter, to allow for the various awkward positions in which the jumper may fall.

Having now briefly discussed the paraphernalia necessary to the event, one may pass to a consideration of the details of the vault itself. To stress the essential importance of the whole complicated series of movements being run into a smooth, uninterrupted sequence, it is proposed to describe the event as a whole, without any attempt to divide it up into its various component parts.

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In the run-up, the relative amount of speed required is not important, provided that, whatever that speed, it is gradually developed to such a degree that when the take-off arrives the body is almost automatically swung up on the pole without any perceptible stop or jerk. Of course, generally speaking, the greater the speed the greater the momentum produced, and hence the better the swing; but it is an optimum rather than a maximum which must be aimed at, since the latter will tend to produce an interruption in the sequence of movements quite sufficient to discount any advantage previously

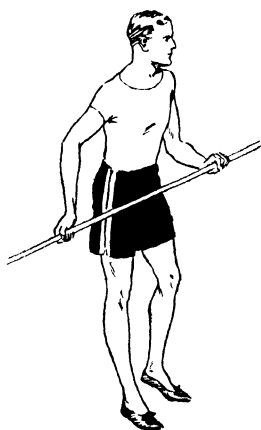


FIG. 21.

gained by rapidity of approach to the take-off. A run-up of 20 to 30 yards is usually ample, but to accomplish this distance whilst carrying the pole, and maintain steadiness of both pole and body, is a matter requiring persistent practice. The pole (during the run-up) is held by both hands more or less parallel to the ground, or perhaps with the point—which, incidentally, may be either spiked or consist simply of a wooden knob—just slightly raised. In right-handed jumpers this hand is the uppermost on the pole and is placed under it, the left hand being some 2 feet 6 inches further down the pole and placed over it (see Figure 21). The correct point at which the grip with the right (or upper) hand should be taken is decided by holding the pole vertically against the cross-bar and judging with the eye the point on the pole opposite the bar. The right hand should then hold the pole some few inches above the selected point.

Coming, thus, to the "take-off," the point of the pole is plunged into the take-off box fairly and squarely against the back board. This tilting down of the point

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should raise the far end of the pole sufficiently to lift the arms slightly above the head. The lower hand is now run up to the upper — never above it, as this constitutes “climbing” and is not permitted — and the body swung off the ground (*see* Figure 22), the legs assisting this movement by almost automatically swinging forwards and upwards. Now comes the stage when strength of arms and shoulders tells. As the momentum from the run-up peters out, the body is pulled up

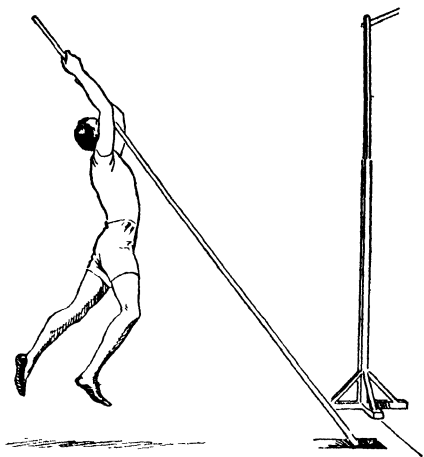


FIG. 22.

with the arms, and the legs are drawn up towards the chest, until the whole body is more or less bunched up on the pole, roughly at the level of the cross-bar (*see* Figures 23 and 24). As the upward pull and swing continue, mostly the

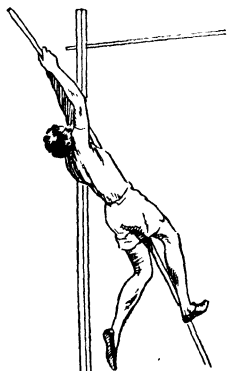


FIG. 23.

former now, the body is turned round to the left (*see* Figure 25), so that when the feet and legs are shot out as far and as high as possible, and the arms raised to an angle above the point where the hands grasp the pole, the body comes to be face down over the bar. The termination of this turning movement, which, as ever, must come as a smooth continuation of the upward pull, is shown in Figure 26. (The shoulders are well

above the level of the hands, and the legs are just in the process of being straightened out. Note that the

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right hand still maintains its position just immediately above the left.) The completion of this stage is admirably shown in Figure 27, both legs and arms now being completely straight and the body swung face downwards well over the bar. There only remains now to get the upper part of the body safely over the cross-bar and to release the pole in such a way that it falls back from the jump, for a pole following through the cross-bar that a jumper has already successfully cleared is a most distressing occurrence.

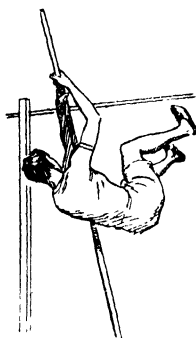


FIG. 24.

This final process is brought about by a last thrust with the arms, which not only sends the pole back, but also acts as a force to propel the head and arms over the bar, below which level the feet have already probably dropped (see Figure 28). If this final thrust can be achieved while the legs are still directed upward, there is every possibility of adding a good 6 inches or so to the jump. Figure 29 shows the completed release of the pole, which is falling back to the track, whilst the jumper himself demonstrates perfect falling technique, the body descending in a straight line and squarely facing the bar, so that the landing will take place in the middle of the pit and on the feet.

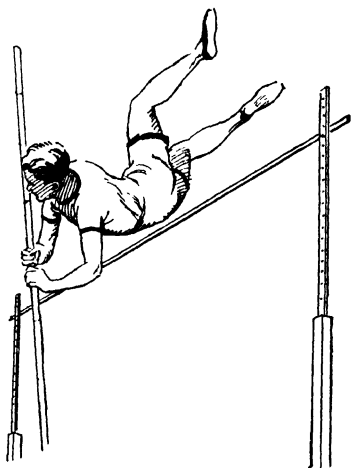


FIG. 25.

It can be seen from this brief description that the series of movements which comprise this event form a

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rather complicated mechanism which demands from the jumper the complete confidence which can only come

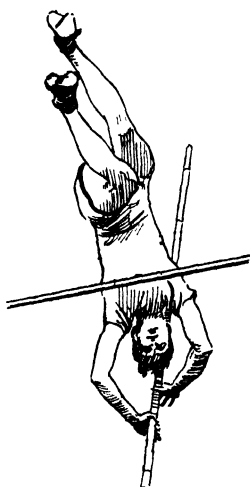


FIG. 26.

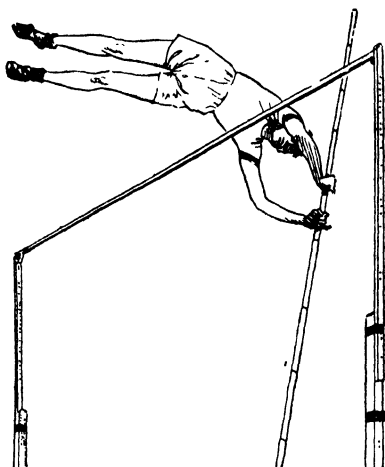


FIG. 27.

from long practice and experience, and from a very high degree of physical fitness. In order that this may not be put to any greater strain than is necessary, it is

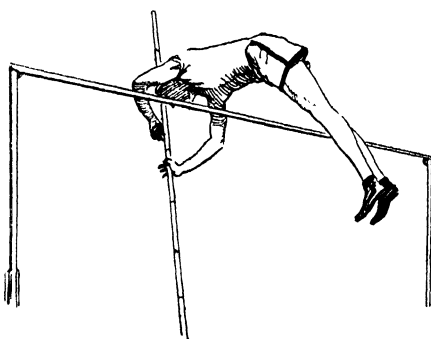


FIG. 28.

essential that in competition the pole vaulter be very careful to keep thoroughly warm, and a further saving

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nowadays is allowed by the rule which permits a jumper to come in at any height he chooses—and by its most recent extension, which gives him the option, after having a preliminary jump at a lower height, of missing certain heights and coming in again at a higher level, providing that should he fail here he abides by the original height of his earlier record. When once a man is a sufficiently competent judge of his own ability, this ruling comes as a great boon, for the effort and strain

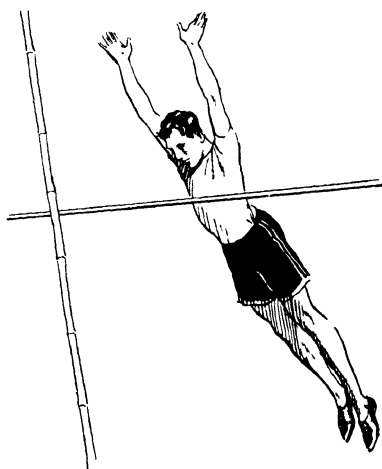


FIG. 29.

demanding by the event are such that after the first five or six jumps they militate against the probability of any further improvement.

In conclusion, one can only say that, with the advent of more competent teachers in the public schools, combined with the visits to these schools of first-class exponents of the event, and with its increasing popularity amongst the rising generation of athletes, one hopes it will not now be many years before England turns out pole jumpers capable of holding their own with the world's best.

CHAPTER XI

THROWING

By M. C. NOKES

Section 1.—General Considerations

THE physical activities which the young of the human species indulge in unprovoked, and acquire without instruction, may be classified as running, jumping, climbing and throwing. The last of these is biologically the last to be acquired, as the development of the hand is a necessity for the performance of the act, and the hand is only possessed in any but a very crude form by the simia and the human race. It seems, according to Köhler, that in the case of chimpanzees, throwing is aggressive, directional and usually expresses anger—that is to say, it is either a utilitarian activity or is an expression of passion and not one of the forms of play, such as jumping and climbing, which are the frequent delight of these animals. With us, however, throwing is certainly one of the forms of play, and instead of consisting of aiming at a mark, it has developed in the athletics of modern times into throwing for distance. It is perhaps worth noticing that the more primitive throwing at a mark is retained in the game of cricket.

It seems, therefore, that throwing is first practised because it satisfies some primitive play-instinct, and later, in an organised community, it gives the individual a chance of asserting his superiority over his fellows, which is always considered a desirable end to attain. But perhaps the highest incentive of all to efficient throwing is the accompanying sensation of rightness or adequacy of bodily movement, an æsthetic experience which is

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incommunicable in words but which provides the devotee of throwing not only with a recompense for the long period of preparation and training, but also with a unique and lasting satisfaction.

There is a tendency nowadays to discuss athletics at what Mr. C. D. Broad calls the level of enlightened common sense—that is to say, to accept and to apply the findings of modern knowledge in so far as they bear on the question at issue. In the case of the thrower the subject-matter is a human organism, usually in youth, and the mind animating it. Hence it is possible that the physiologist and the psychologist can contribute to an understanding of the act of throwing, and it is clear that no analysis of the act can be made except with the use of some of the simpler concepts of physics and dynamics.

Since the motion of the limbs is brought about by the contraction of striated muscle tissue, the question at once arises as to whether the speed of contraction of muscle substance cannot, in suitable conditions, be increased, and thus, presumably, increase the thrower's efficiency. The answer of the physiologist is apparently this. The process of contraction of muscle tissue consists partly in a flow of the viscous cell contents and it is unlikely, in an organism such as man, which works at a nearly constant temperature, that the viscosity of the cell contents is appreciably susceptible of alteration. But the process is not so simple as this. It is by no means certain that great speed of muscular contraction is desirable for maximum efficiency, and indeed Professor A. V. Hill has shown that the realisable work performed by a muscle increases with the duration of the contraction, ultimately reaching a steady level. In fact it has repeatedly been observed that the efficient athlete or games-player tends to exhibit smooth and apparently effortless movements, whereas the inferior performer can often be seen to display awkwardness and to give the impression of strain. It is clear then that the muscular

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contractions must not be unduly rapid for maximum efficiency to be attained.

Now the human organism is a very complicated system of levers which are moved by the contraction of different groups of muscles. For the complete act of throwing any missile a considerable period of time must elapse and the different levers must move in the correct order and to the correct degree for the best result to be obtained. It is the maintaining of the correct order and extent of these contractions which is called muscular co-ordination and which is controlled by the nervous system. It is important in the highest degree that this co-ordination of muscle groups should attain such perfection as to be capable of performance without conscious effort on the part of the athlete, and this state of affairs can only be realised by constant practice.

The reason for the necessity of attaining unconscious physical precision can be stated in the terms made use of by Dr. R. G. Gordon, from whose writings the following argument is derived. The body is animated by a mind which brings about an action by the following steps. It receives notification of external or internal stimuli, performs an act of volition called a conation, and sends to the motor apparatus an impulse which it judges is appropriate to the situation. In a complicated action such as that of throwing it is the building up of a suitable network or pattern of neural paths in the brain which constitutes the ability to perform the skilled act in question, and it seems that the degree of skill attained depends directly upon the "firm organisation, facility and freedom from inhibitions possessed by the whole efferent tract to the final motor path." But the better organisation and facilitation of such neural patterns is brought about by their repeated use—that is to say, by practice, and the importance of the process becoming automatic and unconscious is, it is probable, simply this. The attention is required during throwing for something else. For unless co-ordination, which is a convenient

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term for describing the above process, is well-nigh perfect and automatic, it will be necessary consciously to direct the attention to some part of the body, so to speak, watching the weak spot or correcting some known fault, whereas in making the supreme effort it is necessary that the undivided attention should be directed towards the act as a whole, not considered in isolation but in relation to some strong primary disposition or self-interest, such as aggression.

It has often been noticed that when a competitor wishes to make a supreme effort his active attention, which is directed towards outdistancing some rival or exceeding a certain length of throw, inhibits the perfect performance of the act, causing a breakdown of co-ordination with its attendant poor result. Thus the greatest performers from the competitive point of view are those whose active attention can be centred entirely on the effort as a whole without disturbing the passive attention which is controlling the details of the physical movement.

This vague and very incomplete account of the mental events which occur during throwing must be taken not as in any sense authoritative, but as an attempt to throw some light on the obscure question of the part played by the mind during the performance of a skilled act, the solution of which problem might very well lead to an increase in the efficiency of the thrower.

There can be little doubt that constant practice has another effect besides that considered above, namely that of building up the particular muscle-groups required for the act of throwing. Unused muscle-tissue tends to atrophy or at least to lose its elasticity, but healthy muscle can be induced to grow by exercise. Whether the actual quality of healthy muscle, with regard to its capability of performing useful work, quite apart from the question of its efficient control, varies in different individuals is a point on which the physiologists do not seem to give any information at present, but the man in

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the street would probably give it as his opinion that such differences of quality do exist. It is not clear what the grounds for this belief are.

The questions which await an answer are these. What kind of an organism is the successful athlete, how do his body and mind differ from an unsuccessful one, and what steps must be taken to ensure the development of the immature in the required direction? It is improbable that the state of knowledge at present will admit of a complete answer being given, and perhaps only the third part of the question has been attacked even along empirical lines. Here a certain measure of success has been attained in America and in the northern European countries, but it seems that no secret has been revealed and that the results which have been achieved have been due to the possibility of the learner copying the style of some more proficient and mature performer.

With regard to the question of diet, it must be remembered that some theory of interaction of mind and body is commonly held. It is undoubtedly true that the young of the human species can adapt itself to any mixed diet in reason, and of very varying quantity, without sensible impairment of physical efficiency. At the same time athletes frequently hold that certain articles of diet are bad for training and that others are helpful. Proof of these assertions may quite well be lacking and indeed unobtainable, but there is little doubt that if eating a forbidden article or abstaining from one that is desired disturbs the peace of mind, it is much better to give in to what an external observer may consider a mere whim rather than to permit the presence of a disturbing mental factor to continue. There are fashions in diet for athletes from time to time and once a fashion has been established its observance may prove to be a profound solace to the athlete in training, while its infringement may affect his peace of mind adversely and through that his physical condition.

Some general considerations on the question of learning

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the technique of throwing events are worth noting. All acts of throwing consist, from the point of view of mechanics, in imparting the maximum velocity to the missile at the moment when it leaves the thrower's hand. To do this a period of acceleration from rest occurs, during which the thrower so disposes his weight and so uses his muscles that this acceleration is always positive. It must also be smooth. The importance of the disposition of the feet during throwing is generally recognised and, as in the playing of other games, is the key to success. Unless the performer has complete control of the placing of his feet the best results cannot be obtained.

Another characteristic of the form of all good throwers is that at the moment of delivery the back is straight and the head erect. This shows that the powerful muscles of the trunk have contributed to the successful throw. But often a competitor can be seen who in his effort, as it were, to continue giving an impulse to the missile until the very last moment, allows his shoulders to come forward and his head to drop. This is due to a failure of co-ordination and indicates that the muscles of the trunk are being improperly used.

At present there are not sufficient good performers in this country in the various events under consideration to provide examples of technique to all potential throwers, and it is not easy to see how the present generation can be given the opportunity of proficiency in throwing without a supply of experts upon whom they can model themselves. Hitherto each individual has been doomed to the wasteful method of trial and error, and as a result England has no first-class throwers. It is of vital importance that the young and eager athlete should see the event well done. He should be at close quarters with the expert and should be able to watch him carefully and to question him. This part is played in America by a highly paid official called the "coach," and the need of example is realised in Sweden also.

There is one danger inherent in the slavish copying

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of the form of any athlete, however good. He is certain to have idiosyncrasies, tricks of movement, which happen to suit him and sometimes in spite of which he performs well, but which *per se* contribute nothing to the efficiency of the thrower and may be totally unsuitable for the pupil. These individual tricks of movement, which are readily noticed by the onlooker, are very liable to be seized upon by the pupil as the important feature of the thrower's form which has given him his success. Such idiosyncrasies are the particular movements of the left leg employed by a shot putter before he starts to move across the circle, the method of carrying out the preliminary swings with the hammer, or the details of the settling down process of the discus-thrower. What is necessary is to abstract what is common to all good performers in any particular event and to copy that rather than to concentrate on details of individual movement which are noticed particularly because of their very variability. In the succeeding pages an attempt will be made to stress only the essentials of form which are common to all good performers.

There is one other factor which contributes greatly to success in throwing. It is ambition or the will to win. Unless an athlete is convinced of the "worthwhileness" of the performance of his event for some reason which seems to him good, and is prepared to spend much time, thought and often more money than he can well afford in achieving his aim, it is unlikely that he will ever be first-class. This fixity of purpose carries with it another activity which will take up much of his time, and which may be called athletic introspection. He will find himself constantly thinking about the performance of his event, sometimes elated at his success and sometimes depressed at his defeat, but always turning his attention to acquiring that rhythm and deftness of movement without which big distances can never be attained.

The performance of the act of throwing requires a missile of some kind, and the introduction of organised

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competitive throwing has resulted not only in the standardisation of the missile, but has also imposed restrictions on the thrower as to the method he may employ and the space in which he may perform his movements. The reason for this is clear. In competition it is necessary to measure the distance thrown, and for purposes of comparison the throw must take place either from behind a scratch line, in which case the length of the throw is taken as the perpendicular distance from this line to the point where the missile fell, or from a circle when the throw is measured radially.

It is also necessary to standardise the weight and dimensions of the objects thrown and to prohibit the athlete from crossing the scratch line or coming out of the circle until it is certain that he has retained his balance after delivery of the implement.

An attempt will now be made to describe the outward appearance of the movements of the best exponents of the different throwing events. Only essential movements will be stressed, and it must be remembered that the English language is very poorly equipped with words which can be used to communicate the sensations which accompany all movement. It seems to be true, however, that when an act of throwing is successfully carried out, when the thrower knows that he has done well without observing the flight of the missile or applying the measuring tape, there is accompanying that act a feeling of harmony, of effortless accomplishment, of adequate creation, which not only provides him then and there with a thrill of pleasure, but whose memory may well be one of his most valued possessions.

Section 2.—Shot Putt

Exactly what constitutes a putt as distinct from a throw is a little difficult to determine. At any rate, throwing is forbidden. It is also impossible to throw a 16-lb. shot as far as the best performers can project it by the permitted means. Either hand may be used, but

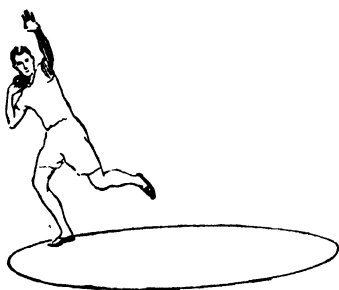
THROWING—SHOT PUTT

not both. The putt is made from a circle 7 feet in internal diameter, and at the front of the circle is a toe-board 4 inches high, covering about 120 degrees of arc. The athlete's foot may come against the inner surface of this board but he may not step on it.

There are five main contributory motions which go to make up the complete act of shot putting, and it is essential that these should be welded together, each of due intensity and at the right time, for perfect form to be attained. They are these: the movement across the circle, the straightening of the legs and back, the turning of the trunk about a vertical axis, the shooting out of the putting arm and the final flick of the wrist and fingers.

The athlete, who may be considered to be right-handed, picks up the shot, usually in his left hand to avoid tiring the other one, and takes up a position on the inside of the circle remote from the toe-board and facing a direction at right angles to the intended line of flight of the shot. He then takes the weight of the shot in the region of the base of the first three fingers, and flexing the arm, holds the shot in position below the right ear. This contact with the neck helps to keep the shot quite steady during the movement across the circle. There are variations of this position whose merits are controversial. The actual process of putting now begins. The athlete settles the details of his position with regard to comfort and then uses the left leg, which he lifts from the ground, to initiate a sideways movement in the direction of the toe-board. At the same time the right leg is bent and the right shoulder is lowered (Fig. 30A). The swing of the left leg and an impulse from the right foot carry the body across the circle, the thrower landing on the right foot (Figs. 30B and 31), which is placed near the centre of the circle and which is followed by the landing of the left foot in the neighbourhood of the toe-board (Figs. 30C and 31). The right leg is still bent and right shoulder still lowered, but the thrower is passing through this position which is only momentary.

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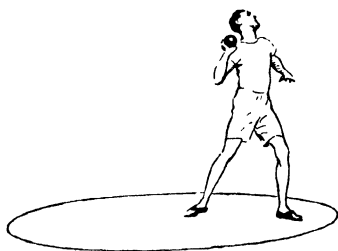
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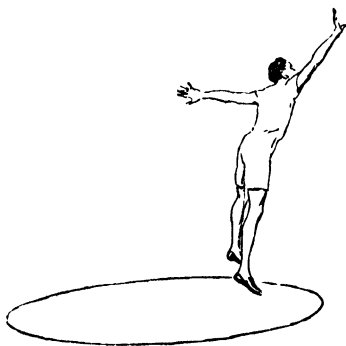
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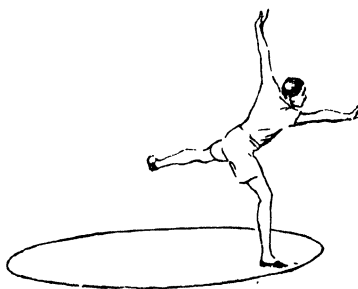
C



D



E



F

FIG. 30.

THROWING—HAMMER

The next three movements occur in such rapid succession that it is difficult for the observer to say whether they are simultaneous or not. The slow-motion camera reveals the fact that the straightening of the legs and the swinging to the front of the shoulders, the back being straight and head erect, occur before the arm is extended to the front for the delivery of the shot (Fig. 30D). The final impulse is given by a powerful straightening of the hand in the line of prolongation of the forearm (Fig. 30E).

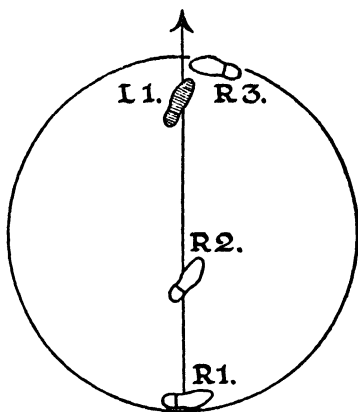


FIG. 31.

At this point a device is adopted for keeping the athlete inside the circle. This is commonly known as "the reverse," and consists in bringing up the right leg from the centre of the circle so that the outside of the foot strikes the vertical inside face of the toe-board while the left leg is swung backwards and upwards (Figs. 30F and 31). Throughout the whole movement the left arm is used for balancing the body and is disposed as individual requirements dictate.

The greatest shot-putter of all time from the point of view of performance is J. Kuck of the United States, who won the event at the ninth Olympiad at Amsterdam, where he failed to produce his best form. He weighs about 15 stone and is stated to have put the 16-lb. shot 56 feet in practice. His best performance in competition is about 52 feet.

Section 3.—Throwing the Hammer

The hammer consists of a spherical weight attached by means of steel wire to a triangular handle, the total

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weight is not less than 16 lbs., and the over-all length is not more than 4 feet. It is thrown from a circle of 7 feet internal diameter, and the thrower usually swings the hammer three times round his head; and then, himself turning two, three or four times within the circle and gradually increasing the speed at which the hammer is moving, releases the instrument to the best of his ability in a manner designed to give the maximum range of throw.

The thrower takes up a position in the circle remote from and with his back to the intended direction of the throw, the feet being 12 to 18 inches apart. The hammer handle rests in the fingers of the left hand, which fingers are covered by those of the right hand. The hammer head rests on the ground to the right of the performer.

In starting the throw the hammer head is raised from the ground and, without moving the feet, is swung round the head, slowly at first, but working up to an optimum velocity by the time the third swing is completed. It is very important that this preliminary swing should be smooth and that the thrower should retain complete control of his balance throughout. The only way to ensure that the optimum velocity has been reached by the end of the third swing is by trial and error, the correct performance of this part of the throw being accompanied by a muscular sensation which is subjectively recognisable but which is incommunicable in words.

The difficult part of hammer-throwing is to control body and hammer during the turns and to finish the turns with the feet so placed and the weight so disposed as to be able to impart a maximum impulse to the hammer at the moment of delivery.

During the turns the hammer head can be considered to move in a plane inclined to the horizontal at angles varying between about 30 degrees and 60 degrees according to the particular style of the thrower. The actual path of the hammer head is, of course, three

THROWING—HAMMER

dimensional, but it is a convenient fiction to consider it to be moving on a plane surface inclined to the horizontal.

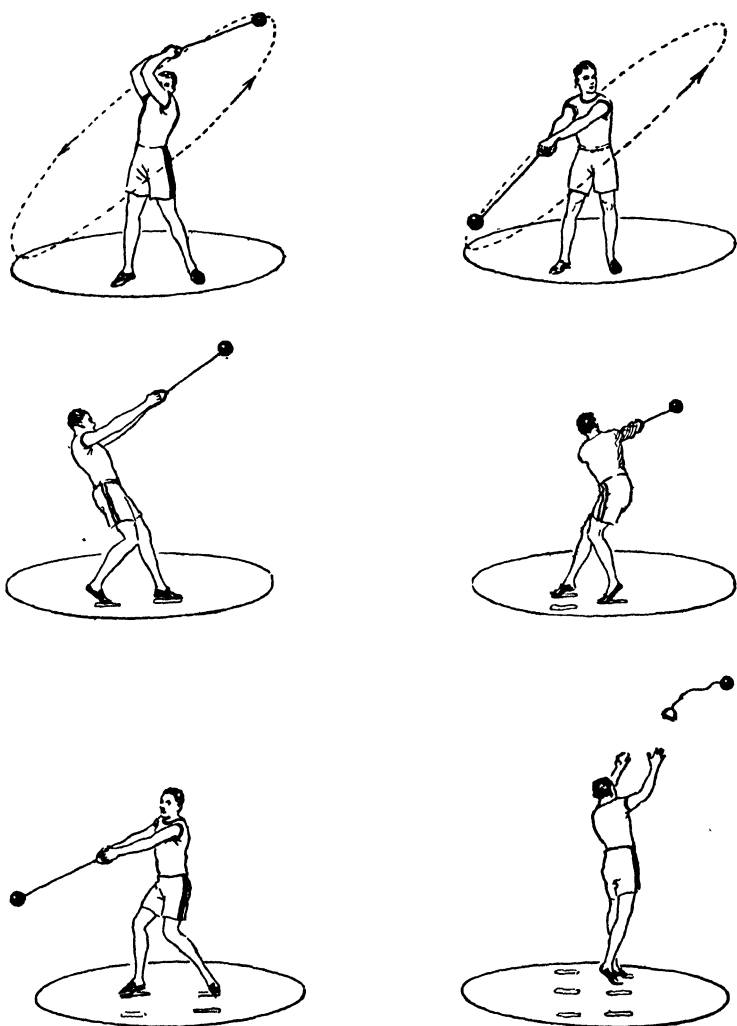


FIG. 32.

This is indicated in Figure 32. Thus, while the body rotates, the arms, which must be straight, rise and

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fall. The hammer head is within a few inches of the ground when the thrower's back is towards the direction of throwing and may be nearly 9 feet from the ground when he has rotated through 180 degrees. Each individual must discover for himself the correct inclination of this hypothetical plane to the horizontal which suits his own particular style.

Although the acceleration given to the hammer must be smooth it cannot be uniform, because during part of

the turn its motion is assisted by the gravitational pull of the earth and during part of it there is opposition. It is during the fall of the hammer head that the acceleration is greatest, and during this period the increase of tension can be felt in the fingers and must be counteracted by the correct disposition of body weight. There is thus a rhythmic and increasing feeling of tension which satisfies the

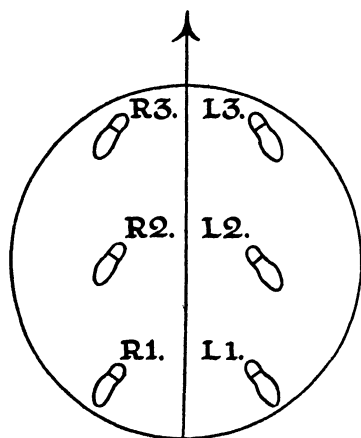


FIG. 33.

thrower that acceleration is positive throughout the effort.

It is now necessary to consider the footwork during the turns. All turning is about some point on the ball of the foot, and although during the process of throwing the performer's heel may come to the ground, no good performer actually rotates about his heel. The process consists of a rotation on the left foot, the right foot coming to the ground in a position slightly behind its former position. The left foot is then drawn back and the process repeated. In this way it is seen that during the turn there is progression across the circle, and it is possible that this small added velocity affects the distance

THROWING—DISCUS

thrown to a slight extent. Some notable Swedish throwers, however, have been observed to dispense with this progression across the circle.

The difficulty of controlling such an evolution is considerable, but unless the turns are finished with the body perfectly disposed for the act of delivery it is impossible to throw successfully. The delivery consists in planting the feet correctly and firmly on the ground, the tension on the arms being very considerable, and then by rising on the toes, straightening the legs and back, and sweeping the arms upwards and to the left, imparting added velocity to the hammer and at the same time ensuring the optimum angle of delivery, which is 45 degrees. The whole action must be carried out smoothly, without any break or jerk, and if done correctly the thrower will remain stationary in the circle, his head turned to watch the flight of the hammer.

The accompanying sensation at the moment of successful delivery is indescribable but is amazingly pleasant. There is no sense of strain or effort, although, of course, the effort has been considerable, but rather a sense of physical well-being and of the satisfaction of some inner need.

The greatest hammer-throwers have all been Americans of Irish birth or descent. Fifteen stone is the minimum weight required. P. J. Ryan, who holds the world's record of 189 feet 6½ inches, is one of these and the other is F. D. Tootel, who won this event at the eighth Olympiad with a distance far below his capabilities. He is now a coach of athletics and is debarred from competing, but it is stated that he has repeatedly thrown over 200 feet.

Section 4.—Throwing the Discus

The discus consists of a smooth metal rim attached to a wood body with brass plates set in the centre. The largest dimension is a circle not less than 8½ inches in

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diameter, and the thickness in the centre is $1\frac{3}{4}$ inches. The sides taper to the rim, which is rounded on a true circle of $\frac{1}{2}$ inch diameter, and each side is a counterpart of the other. The weight of the discus is not less than 4 lbs. 6.4 ounces, and it is thrown from a circle whose interior diameter is 8 feet $2\frac{1}{2}$ inches.

The discus is thrown with one hand and must be made to scale or fly flat through the air. This is effected by imparting spin with the fingers of the right hand, at the same time pressing down with the thumb to guide that part of the discus to which the thrower's force is not being immediately applied. This pressure of the thumb is of great importance and is not always mastered by comparatively experienced throwers. If it is neglected the discus will turn over and over in the air and the throw is wasted.

The thrower takes up a position inside the circle remote from the direction of the throw and facing a line at right angles to it. The feet are about 18 inches apart. Some preliminary movements are made to ensure the stability and balance of the thrower, the details of which are personal and immaterial, but at the conclusion of them the thrower is holding the discus in his finger-tips with the throwing arm stretched as far back as is convenient (Fig. 34A). This is to ensure the longest possible sweep of the arm in the actual throw, for it is only possible to execute one turn in the circle and the maximum velocity has to be attained in a very short time.

All the movements should be exceedingly smooth and the acceleration of the discus throughout the throw must be positive. During the turn the throwing arm rises and falls, giving the impression of definite wave motion in some throwers, but in others this is not so easily perceived. Since good results are obtained by either method it is probably unimportant which style is adopted, provided considerable velocity is imparted to the discus at the end of the turn and the thrower finds himself in

THROWING—DISCUS

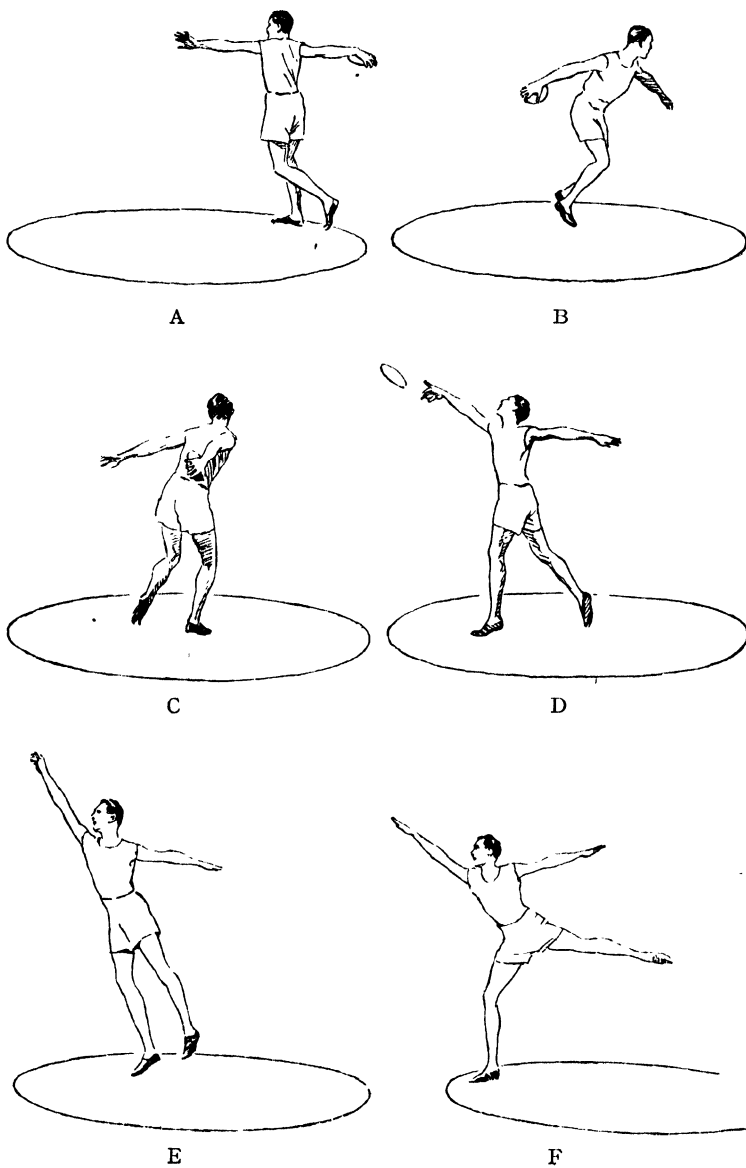


FIG. 34.

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a position to deliver the discus correctly. The back of the hand is uppermost.

The footwork is not difficult to learn. The first half of the turn is carried out on the ball of the left foot, which brings the right foot to the ground in front of it in the direction of the throw. The weight is now shifted

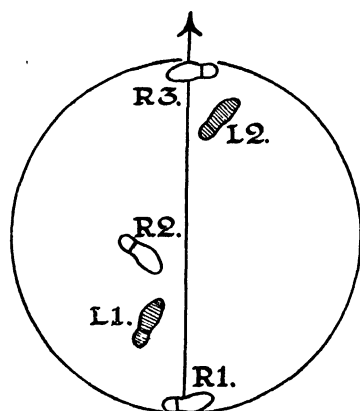


FIG. 35.

to the right leg, and another half-turn is made on the ball of the right foot. This leaves the thrower with feet disposed as in the preliminary position, but he has moved across the circle in the direction of the throw.

He has now to deliver the discus. This consists of two motions, and unless they are carried out in the correct order and welded together harmoniously it is impossible to throw with

success. The turn must be finished with the weight of the thrower so disposed that he can straighten his legs and back, throwing his chest forward, and maintain the tension on the discus which has been acquired during the turn. When his legs have straightened he feels that he is in a position to exert an added pull on the discus, the right leg particularly becoming a compression member. The final act of delivery now takes place. The right arm is swept upward and forward across the body, the discus leaving the hand quite smoothly and at an angle of about 30 degrees with the ground. Some throwers prefer a greater angle. The sensation accompanying successful delivery cannot well be expressed in words, but gives very great pleasure to the thrower.

One of the greatest discus-throwers is C. Houser of the United States, who won this event in the eighth and

THROWING—JAVELIN

ninth Olympic Games. He weighs about 14 stone. Like most American throwers he uses a somewhat flat trajectory for the discus. He is the holder of the world's record at about 158 feet.* In the Olympic Games of 1928 his first two attempts were disallowed, but with his third throw, which was his last chance, he won the competition.

Section 5.—Throwing the Javelin

The javelin is made of wood, is 8 feet 6 inches long, and must not weigh less than 1·6 lbs. It must have a sharp iron or steel point and must be bound for 6·3 inches in the neighbourhood of the centre of gravity with whipcord, but there must be no other aid to holding it. It must be held at the binding, and the point of the javelin must touch the ground before any part of the shaft. It is thrown from behind a scratch line which must be at least 12 feet in length.

If the hand is held palm upwards and a javelin is placed in it, the binding resting in the palm and the point of the javelin being on the same side of the hand as the little finger, the hand will naturally close on the binding in the correct manner for throwing. The thumb is directed along the shaft and the first finger, which is the chief throwing finger, rests against the edge of the binding. It is both unnecessary and tiring to grip the javelin tightly until the actual throw is made, when the first finger and thumb close tightly on the shaft while the remaining fingers relax their hold.

The run-up is about 20 yards, and the thrower must attain a high degree of precision in it both as to speed and as to the placing of his feet. The method of holding the javelin during the run varies. Some first-class performers hold it horizontal with the hand close to the right ear, some hold it inclined downward with the

* *Note.*—H. Hoffmeister (Germany) has thrown 160 feet $\frac{3}{8}$ inch, but this record has not yet been accepted by the I.A.A.F.

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point a foot or so from the ground, and some have the right arm fully extended backwards with the javelin lying along the arm. S. A. Lay of New Zealand, who has thrown 222 feet 9 inches, uses the last-named method.

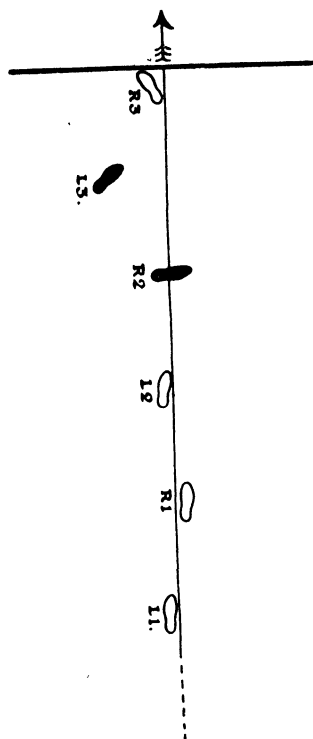


FIG. 36.

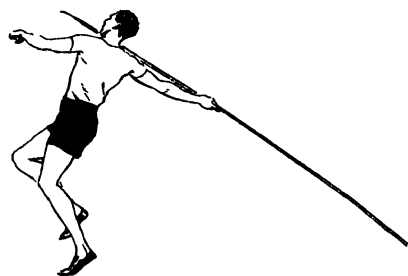
If either of the first two methods is adopted the javelin must be drawn smoothly back to the full extent of the right arm by the time the side-step, which is preliminary to the throw, is made.

The run-up should be smooth and of gradually increasing speed until the side-step which immediately precedes the throw, when the right foot is turned to the right and the left is carried off to the left of the line of the run-up. At the same time the right shoulder is dropped by an inclination of the trunk.

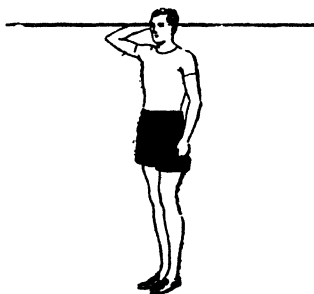
The throw consists of three movements. The arm is first bent so that the hand is brought to a position just behind and to the right of the right ear. The right shoulder is then swung forward and the arm is straight-

ened upwards and slightly forwards. The amazing speed with which these movements are carried out by the best javelin-throwers makes it difficult for an observer to analyse them, but two things are essential for success. The first is that the shoulder should be brought to the front before the arm is straightened, and the second is that the javelin should be held close to the head until the moment of straightening the arm. In

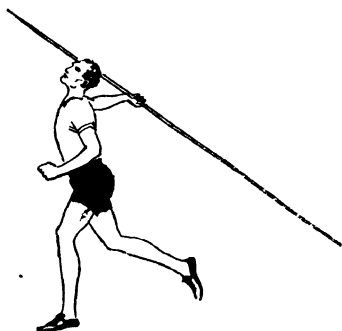
THROWING—JAVELIN



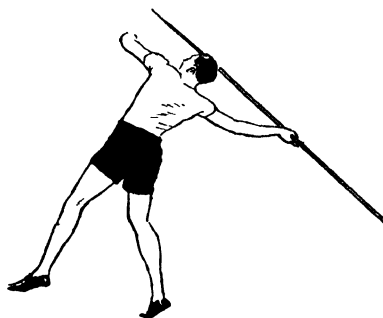
B



A



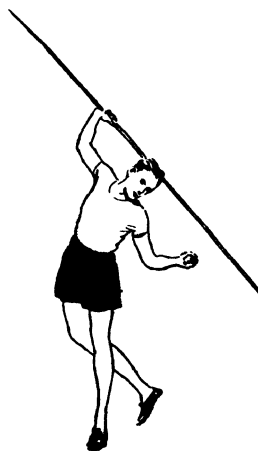
D



C



F



E

FIG. 37.

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order to keep the thrower behind the scratch line the feet are reversed—that is to say, as soon as the javelin has left the hand the weight is shifted from the left leg to the right, which is brought in front of the body to check the forward movement.

The whole movement, in spite of the speed at which it is carried out, can be performed with perfect smoothness, and in the best throws it is noticeable that the javelin itself shows no sign of whip or vibration. This description of the throw is almost word for word applicable to throwing the cricket ball, the chief differences being the grip and the elevation given to the missile. It is certainly true that there are cases known of athletes who could throw the cricket ball well and who very soon showed considerable proficiency with the javelin.

The holder of the world's record is E. H. Lundquist of Sweden, and the distance thrown was 232 feet $11\frac{3}{4}$ inches. He was also the winner at the ninth Olympic Games with a throw of 218 feet 6 inches. This throw was the first of the competition.

CHAPTER XII

WALKING

WALKING races are held either on the road or on the track, the former being of greater antiquity. Despite its somewhat anomalous character—for it is certainly curious to see a man racing at a speed which he could easily eclipse by employing a more natural mode of progression—the sport has many patrons in England, America, Canada and certain continental countries, notably Italy and Denmark ; and it is undoubtedly a healthful though rigorous form of exercise. There has recently been a revival of interest in Germany ; and although the event was eliminated from the Olympic programme in 1928, owing to the difficulty of standardising methods of judging, it has been restored for 1932.

Walking races are possibly more exacting than any other form of track athletics. Every muscle is subjected to continual strain on account of the style employed, with the locked knee and upright carriage. Fair walkers progress by means of what really amounts to a series of jerks, and the fatiguing nature of this scarcely requires emphasis. Evidently, therefore, the walker needs a severe course of training.

Having in view the vigorous play of almost all the muscles in walking races there seems to be sound reason in the recommendation of experts to commence training with physical jerks, skipping, and exercises with light dumb-bells. The dumb-bells are used to develop and speed up the arm swing, which is so pronounced a feature of walking.

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In the early stages of training, preferably on the road, half-speed work should be done, and the pace worked up gradually, no fast work being attempted for several weeks. A good swinging style is to be emulated.

In good and fair walking the body carriage should be upright, or nearly so, the shoulders well back and the arms held well up in a bent position and swinging at each stride with the movement of the legs well across the chest, which should be well out. The movement of the hips should be as free as possible, and at each stride they should suffer a slight twist round, so that the advancing leg is swung inwards and the feet consequently step almost in a direct line. This somewhat increases the length of stride and, of course, gives greater pace. The leg should be perfectly straight and the heel should reach the ground first. The arms should be brought right up and across the chest with a really powerful drive. The motion of the hand commences slightly to the rear of the hip and comes up across the body almost to touch the opposite shoulder. During the stride there is a very slight forward lean of the head and body, but at its conclusion they should be upright.

The former definition of walking, "progression by steps so taken that the heel of the foremost foot must reach the ground before the toe of the other foot leaves it," embodied the principal feature of the leg action. Fair heel-and-toe striding demands that the leg which is carrying the weight shall not be bent—in other words, that the moment the heel comes to the ground the knee of the leading leg is locked and the leg remains stiff until, after the completion of the stride, the toe is lifted again. The shuffling style whereby the knees of both legs are bent, and not merely that of the one which is in the air, is both ungainly and unfair; and it is such an abuse of the sport which brings it into disrepute.

As in long-distance running, the walker will be well advised to train for pace rather than distance. For one thing, in walking pace is exceptionally fatiguing; for

WALKING

another, it is less likely to induce staleness. Moreover, it is necessary to guard against slow walking; always go at a sharp pace with a good arm swing. The two-miler should be content with $1\frac{1}{2}$ -mile spins, varied with fast miles and half-miles; the seven-miler with 4 or 5-mile jaunts, likewise interspersed with short, snappy walks. These distances are the championship events in England; in America only the 7-mile event is held. This does not, of course, mean that the full distance should never be covered; as in running, it must be done once or twice as a test, unless one has a very reliable system of graduated races upon which to base his training.

Road walking possesses the same features as track walking except that there is more jar and the methods of negotiating the hills have to be acquired. The general training resembles that of the Marathon runner, particularly for the long walks, such as, for example, the London to Brighton, promoted annually in September by the Surrey Walking Club. Care must be taken of the feet, which should be hardened so as to avoid soreness, and a strong shoe with a low heel is required.

Just as in road running the training should be of gradually increasing severity, following a time and distance schedule. For really long walks a long swinging stride should be sought, with a lower carriage of the arms. Nothing but genuine walking pays in this type of contest, which is a most searching test of endurance; consequently a good style, and no shambling, must be acquired if success is to be attained. The sport is controlled by the Road Walking Association.

CHAPTER XIII

RELAY RACING

RELAY racing is a subject of considerable interest and importance in any consideration of the future of athletics. Though the relay idea was formulated some seventeen years ago in this country (the first A.A.A. relay championship was held in 1911), it is only in the last eight or ten years, since the War, that it has to any marked degree come into its own. To-day, however, relay racing has become such a popular and such a universally practised branch of athletics that one realises it has in all probability an immense future before it, and it is by no means a wild dream to imagine the day when it will no longer be a "branch," but when athletics and relays will be two parallel sports of equal magnitude and importance. Taking this broadest view one includes, of course, under the heading "relays" the team events which allow of the system being extended to the field events and thus to encompass the whole athletic programme. A "team event" is one in which the rival teams are each represented by a stated number of men, whose aggregate effort shall decide the event. The relay system presumably finds its appeal because it provides adequately for the development of the "team spirit" in athletics, and thereby automatically tends to eradicate that too individualistic side of athletics which has been in the past the one big peg upon which critics, often rather unjustly, have hung their complaints. By allowing a relatively larger number of men to compete it serves to raise the general standard of athletics and caters more

RELAY RACING

satisfactorily for the competitive requirements of the average and mediocre performer, whilst at the same time allowing the "stars" to shine with as much if not more brilliance than before.

The origin, history and some idea of the scope of the relay movement is fully dealt with elsewhere (Chapters I and III), showing how from its initial home in America it has spread to be a world-wide concern, popular alike with competitor and spectator.

It is an interesting fact, especially in view of the rather high-handed criticisms often levelled at American specialisation, that the relay events on any programme in the United States are those in which victory is most prized. America has many "all-relay" meetings—some of them now world famous, such as the gigantic Pennsylvania Meeting, the Drake Relays, and the huge indoor meeting of the Illinois A.C.

There are very few essential rules pertaining to relay racing. The various distances can be combined at will, though to-day the tendency is rather to run four similar distances. In passing it may be noted also that there is no necessity to limit the number of men per team to four, and in America particularly eight-men relay teams are comparatively common; but the rules do make a point of the stipulation that no one man shall run more than one stage in any relay event.

The chief ruling for any relay event is that at the completion of every stage of that particular event a line shall be drawn at right angles to the edge of the track, and two similar lines respectively 10 yards behind and 10 yards in front of this original line. Within the 20 yards thus marked out, the transference of the baton from one runner to the next must take place. The baton itself, which is a hollow cylinder of light wood, bamboo or other material, must, according to A.A.A. standards, weigh not less than $1\frac{3}{4}$ ounces, and be not more than $1\frac{3}{4}$ inches long.

The only rules beyond these are concerned with a

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special type of relay known as the "shuttle relay," used now almost exclusively for the hurdle events, though originally for the short sprints also. In this, two flights of hurdles (or two lanes, as the case may be) are required for each team, and the distances are run back and forward, the change-over being accomplished by a touch on the shoulder, which must take place within a marked yard behind the starting line at either end.

There are many obvious objections to this method, but it has been found that in these events, where the men running two successive stages run into one another as it were, the changing by baton was highly impracticable.

The usually accepted distances for relay events in this country are the 4 by 100 yards, 4 by 110 yards, 4 by 220 yards, 4 by 440 yards, 4 by 880 yards, 4 by 1 mile, 4 by 120 yards hurdles and medley relay (440, 220, 220, 880 yards), but longer distance relays and odd distance relays are quite a common feature on any programme to-day.

The great charm of relay racing comes from the fact that besides giving just as much opportunity for a display of speed and athletic ability and for a demonstration of track tactics as the ordinary event, it adds the difficult and consequently stimulating element of combination. The questions relative to the running of the various distances concerned in relay races have been fully dealt with in previous sections of this chapter. One or two small considerations, however, arise with regard to tactics, especially in the long-distance events. (In the sprints and hurdles, of course, it is simply a matter of "full speed ahead" from start to finish.) In these, the getting away fast—perhaps even a little faster than usual—is, when possible, all important, as it serves either to consolidate a lead previously gained or to establish one, or, on the other hand, to cut down a deficit, in any case acting as a stimulant to one's *morale* and a depressant to one's opponents. Having made this initial spurt, of perhaps up to 50 yards, the relay

RELAY RACING

runner must settle down to complete the rest of his race at the maximum pace at which he is capable of fully running out the distance concerned. To do this requires a knowledge and judgment of pace both in himself and his rival which only really comes after extensive experience in this form of running.

The only part that really comes into the practical politics of this section is that concerned with those 20 yards in which the baton must change from hand to hand.

Perhaps this statement needs slight modification in that a few words are due, first, to the original start of any relay and, secondly, to the question of running relays in lanes.

With regard to the start, since the "crouch" has now become almost universal even to the extent of applying to half-milers, one must consider how this is to be accomplished with the baton. For a successful start, the essence of which is coming straight out of the "holes," it is necessary that the starter should be perfectly balanced on his mark. To effect this with a baton in one hand requires practice, and the best method is probably to tuck the baton in between the thumb and index finger, and if to hold it there necessitates any difference from the usual position of one's fingers, to be sure that the other hand is made to correspond. For those who start with their knuckles (middle joint of the fingers) on the mark, the problem is somewhat easier, as the baton then comes to lie automatically in the palm of the hand. Which hand, depends upon the method of change-over used, but it is usually the left, the baton then being correctly placed from the start for the change to the following man's right hand.

One point, already stressed above with regard to the start, and that experience has shown to be of great value, is that it always pays, even in the longer distances, to establish a lead from the gun! Particularly is this so in relays not run in lanes and in the shorter distances.

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With regard to the lane question, in distances of up to a quarter of a mile at any rate, it is almost essential to the production of a fair race to run it in lanes. Since this necessitates the runner in the lane farthest from the pole starting relatively ahead of his opponents, *i.e. en échelon*, it demands from a runner a considerable capacity for judgment of pace, and from the spectator judgment of distance. For distances beyond the quarter-mile and after the first quarter of a 4×440 yards relay, lanes are really both impracticable and unnecessary. The stations once drawn for at the start of any relay must be maintained throughout the race, except when the distances between the runners are so great that there is no possibility of interfering with one another, when courtesy admits of the change being made on the pole.

And now, with regard to that all-essential change, proficiency is only possible with much practice and perseverance. Nevertheless it is well worth all the effort put into it, for a bad change-over may mean the loss of anything up to 5 yards, whereas good changing by an average team will make them easily victorious over a vastly superior quartette whose changing is poor. The essential aim in this matter is to effect the change of baton from hand to hand with the least possible loss of time. The methods will therefore automatically vary according to the distance being run. For long distances, where presumably the "giver" will be well-nigh exhausted at the end of his stage, the responsibility for the exchange lies with the "receiver," who should wait for the baton on the back line, *i.e.* 10 yards behind the real starting line. In other words, the receiver uses the old standing start with the left foot in front and the body weight on it, the right foot being to the rear and to the right, to give the requisite balance. This, in principle, applies also to the quarter-miles, but for really fit and fast quarter-milers and for the shorter distances many more problems enter into the question. The receiver

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must now be on the move, in fact as much as possible on the move when he takes the baton. In other words, the change-over should actually occur as near the farther 10-yard line as is possible, at which point the receiver should have gained the maximum speed possible in the 20 yards allowed. This will not, of course, be his full speed, which takes some 30 to 40 yards to attain. (The leading pair in Fig. 38 will have effected their change well up to the front line, that shown

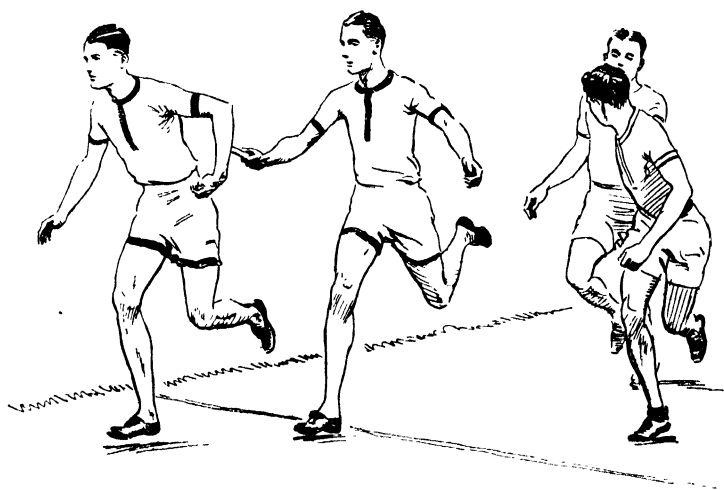


FIG. 38.

being the centre line.) To accomplish this satisfactorily needs considerable practice between the two men concerned, until the receiver gets to know just that point at which, when it is reached by the giver (usually some 6 to 10 yards behind the back line), he must start to run. From that moment he must not look back (good and bad form being shown respectively by the two pairs in Fig. 38), the responsibility for the actual change in short-distance relays lying with the giver. The latter must run right through his distance even after the exchange has taken place, to prevent his fouling other competitors. He effects the exchange by exaggerating

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his forward lean and by a thrust and reach movement, and he must not relinquish his hold on the baton until certain that the receiver has a grip of it. The change, as has been stated, is usually from giver's left hand to receiver's right (back pair in Fig. 38), but this is by no means a universal rule (*vide* front pair in Fig. 38), and there are coaches in U.S.A. who train their men to alternate right to left and left to right changes, to obviate the change of baton from one hand to the other which the second and third men must make during their running if the same method is practised throughout. This latter is, however, the usual course, and it necessitates the second and third receivers changing the baton from the right hand into which they have received it to the left. This change should be made immediately, as it is much less likely to upset the running at this stage than at the end of a race when form tends to go somewhat, and also it is less likely to be knocked out of the left hand inadvertently by anyone passing. There only remains now for consideration the position of the receiver's hand. Several methods are advocated (two are exemplified in Fig. 38)—the one in most general use being that of the giver bringing the baton up into the turned-down palm of the receiver (*vide* back couple in Fig. 38). The latter holds his arm extended and as steady as possible, with the palm down and the thumb pointing towards the body. An alternative is to have the palm turned up (Fig. 39), with the thumb still pointing inwards, when the baton is brought down into it. The third common method particularly employed by sprinters is shown by the leading pair in the illustration—he "cup" method, in which the receiver's hand is held in the form of a cup against his hip, and into this cup the baton is placed. The disadvantage of this method is that it is difficult for the receiver to get an immediate firm grip on the baton and to get rapidly into his normal arm action.

The giver in any method must attempt to hold the

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baton short (*vide* Fig. 39), to leave as much of its length as possible to place in the receiver's hand.

One further matter needs discussion with regard to relays, namely the order in which a quartette of men should be run. In passing, it may be noted that the rules forbid any change in the actual composition of a relay team between heats and final. This order is a matter of no slight importance, and one which calls for considerable knowledge and experience on the part of the coach or captain of the team. It depends, of course, essentially on the individuals comprising the

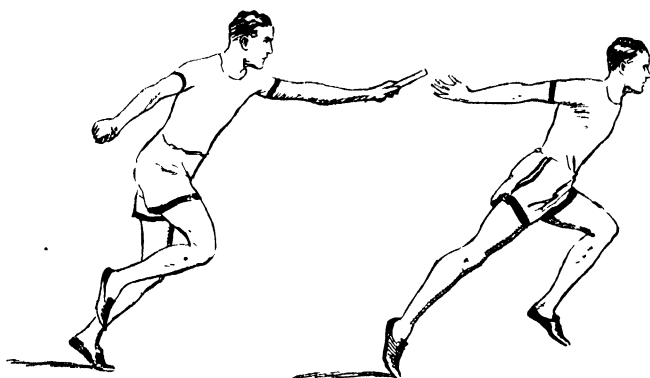


FIG. 39.

team, their respective merits and peculiarities, and the amount of their previous competition on the day of the race, besides, perhaps, varying with the composition of the rival team. But, generally speaking, the plan adopted is that the best of the four runs last, the second best, especially if he be a good starter, first, and the weakest of the quartette, second. Whatever the order decided upon, it should be adhered to for as long as possible previous to a race, to allow of satisfactory practice in baton changing between the pairs concerned.

All sorts of alternatives to this order are, of course, possible. For instance, it is a common practice with the German sprint relay runners to put their best man third,

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on the grounds that this stage is often the weak spot in the adversaries' armour, and that here the crack sprinter stands such a relatively greater chance of producing a position with which his comparatively weaker brother in the final stage can quite adequately cope. But, again, there are those who maintain that the third stage should be the property of the worst of a quartette, in that by then his two better predecessors have had ample opportunity to establish a lead if they are going to—a lead which it is easier for him to maintain than to manufacture. This is particularly the case in a race in which the first stage is run in lanes (*e.g.* 4×440 yards), and it is only when the second men run "free" that the battle for premier positions becomes acute. We have heard yet another famous runner express the opinion that the best thing to do with one's weakest man is to run him first and "get it over."

Finally, in view of the discussion that has arisen from the fact that in the medley relay the Americans run the half-mile last, and we in England place it first, it seems only fair to give an opinion on the question. We feel that the American system is immensely superior, in fact is the only rational one, for as the race is so often run in England with the half-mile first, by the time that this stage is over nine times out of ten the race is also, for it is humanly impossible for even the best sprinters to wipe out the lead of 15 or 20 yards or more which a good half-miler on the opposing side might easily produce. And it must be remembered that such a lead represents about $1\frac{1}{2}$ to 2 seconds at the end of a half-mile. This, together with the first sprinter's flying start, will mean a lead of 20-25 yards before the second sprinter receives his baton, and this, of course, makes the whole thing from then on a farce. On the other hand, by running the half-mile stage last, interest is maintained up to the end, and the chances for the mediocre half-miler of making a good finish materially enhanced.

CHAPTER XIV

TUG-OF-WAR

THE tug-of-war is a heavy-weight event which, at the present time, has a very small following. It occurs in comparatively few athletic programmes to-day, though two tugs-of-war still remain amongst the A.A.A. championships. It was an Olympic event in the 1908, 1912 and 1920 Olympiads, but has been dropped since from the Olympic programme. Though there is a certain amount of technique in the event, it is largely a matter of brute force, and that, perhaps, is why in these scientific days it has lost much of its appeal.

It consists of two teams, usually of eight men aside, pulling against one another on the same rope. The teams may consist of men with a stipulated aggregate weight, or the event may be "catch-weight," *i.e.* "open." The A.A.A. rulings insist on a minimum age limit of seventeen years! The rope must be of not less than 4 inches in circumference and 35 yards in length. It must have no knots in it and must be held by the contestants by a plain grip, except in the case of the "anchor," or man farthest from the middle of the rope, who is allowed to throw it once over his shoulder. In the middle of the rope is tied a distinctive tape, and similar tapes are fixed 6 feet on either side of this, whilst corresponding lines at similar distances to these three tapes are drawn on the ground at right angles to the line of pull. The event is decided by two pulls out of three, a winning pull being that in which the victorious team has pulled the tape mark farthest from it over the ground line nearest to it. Each team in a tug-of-war is allowed one coach, who

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is in many ways the most important man of the side, for, apart from the actual training of his men in the details of technique, he figures largely on the field of battle, and it is he who must use his judgment and experience to know just when to direct his men to give a steady pull or to make the great effort at the critical moment.

CHAPTER XV

ATHLETICS FOR WOMEN AND BOYS

Section 1.—Athletics for Women

THE subject of athletics for women is one which it is advisable to approach with a completely open mind, not so much because one has not by now formulated more or less definite opinions upon this, perhaps rather unfortunately, controversial question, but rather because it is as yet experimental ground.

So may what is written here be taken as it is meant, as an honest attempt at a broad-minded outlook on a subject whose particular claim to attention to-day is its novelty. For as a sport, athletics for women is practically a post-War innovation—just a ten-year-old child. And as such it seems very unjust to level wholesale criticisms at it before it has been given a really fair opportunity to prove itself in the world of sport, an opportunity which it appears to accept with renewed vigour as each successive athletic season comes along. When it has reached a riper maturity, when it is old enough to afford sufficient data from which to draw rational conclusions, then, and not till then, will it be possible to judge whether the promise of the “child” of to-day has become justified by the “adult” of to-morrow. And this “to-morrow” will not yet be for a considerable number of years.

Meanwhile, one can only study with interest the pros and cons of the situation from the light of present-day knowledge. This discussion is no longer one as to whether women shall participate in athletics or not—they do!

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And they give every evidence of continuing to do so with ever-increasing success. Athletic meetings for women and women's events in open meetings are common occurrences to-day, not only in this country, but, generally speaking, all over the world, whilst both national and international organisations for the management of this particular branch of the sport abound ; and it must be said that these organisations show an efficiency and a keenness which presage well for the future development and success of women's athletics.

It is a flourishing sport now, and bids fair to grow to considerably larger proportions within the coming few years. Hence its importance in any consideration of the athletic world to-day.

First and foremost let us dispose of a myth which, though unfortunately it appears to find credit in certain quarters amongst the general public, we feel sure would be scorned by any woman interested either actively or passively in women's athletics, namely the suggestion that the ultimate aim and object of the sport is equality with men. This, of course, is perhaps just an exceedingly remote possibility, but so remote as to be almost ridiculous in any consideration of present-day athletics. Women athletes are bound to emulate their male counterparts, to learn from and copy style and methods evolved long before any venturesome Eve appeared upon the track, but it will always be with the idea of approaching perfection at *their own* relative standard. For instance, greatly as one admires the woman who, in competition with her fellows, records under 12 seconds for the 100 yards or jumps over 5 feet high, in competition with a male "even-time" sprinter or a man who jumps 6 feet she would appear simply ludicrous. In other words, though, judging by the interest and enthusiasm displayed alike by competitors and spectators, there is little doubt that women's athletics has established a definite place for itself in the world of sport, it should remain a separate entity, for it is certainly self-sufficient

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for many a good year yet, and may it long continue so to be.

The question of the inclusion of women's events in sports meetings, hitherto exclusively male, is really of very minor importance. The Olympic Games authorities, after a preliminary experiment in 1928, have decided to retain women's events in the next Olympic programme—in fact have increased their total participation by one extra event. And in many ways this international decision seems to form a very wise example to national and more local organisations. If athletics for women is to progress and to do good, it must be allowed reasonable room for expansion; and until such time as it is more established, it is only right that long-established athletic organisations should give it a fair chance to air its difficulties and advertise its successes by placing reasonable facilities for competition at its disposal. Naturally, on the basis stated above (that women's athletics should be an individual branch of the sport), the object to be aimed at is meetings composed entirely of women's events—quite a number of which, incidentally, are already in existence in this country, as, for example, the Women's Annual Championships. But until such time as the British public, who, after all, are, taken all round, very good judges of the merits of any particular branch of sport, have learnt to appreciate something further than the novelty of these events, it is only fair that they should be catered for to some extent at least by sports organising bodies.

Having, then, allotted to women's athletics a definite but separate place in the category of recognised games, one can proceed to a consideration of its relative merits and demerits as a sport for women.

This, of course, almost automatically involves a comparison with men, because their's is the existing standard on which one bases one's deductions or decisions. Provided, however, that one recognises throughout the opinion stressed above, that women's

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athletics are essentially women's exclusive property, then the comparison serves only as an instructive means to an end.

Are there any valid reasons for objecting to athletics for women? And, again, are there any advantages accruing to women from participation in the sport?

It has been pointed out in a previous section of this book that good in athletics as a sport can be derived in three directions: as a body-builder, as a mind-strengthenener, and as a character-former. Is there anything in a woman's make-up to prevent her taking full advantage of these?

Physically, perhaps, she is actually not so well equipped as a man for the sudden strains or the continued output of energy demanded by participation in athletics. She has smaller bones; her weight, though on the average less, is relatively more adipose and less muscular tissue, and that muscular tissue is not so well adapted, particularly in the pelvis, to withstand the effects of repeated forced effort. Her heart and lungs have a relatively smaller capacity for work—particularly if this latter is prolonged; her blood carries less red-blood corpuscles and, therefore, supplies relatively less of the vitalising oxygen which is essential for the production of energy in the muscles. And those peculiar glands, the endocrine glands or glands of internal secretion, and in particular the thyroid and adrenal glands, function to a proportionately greater extent in women, to the end that they have a higher output of nervous energy and, consequently, a relatively smaller production of physical energy.

Such are a few of the more important points of difference, but does the fact that woman is apparently not so well equipped as man for physical exertion, as typified by athletics, mean that she is not *sufficiently* well equipped? Surely not, if all the time it is remembered she is striving but to reach a definite female standard of excellence. One has but to consider the multitude of

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other sports in which woman now takes her part to appreciate the fact that athletics is far more likely to do more good and less harm than quite a number of them. Women row, they swim, they ski for miles, they play very strenuous tennis, they even play football! and it must surely be admitted there are very few things in athletics they can do, the sheer physical effort of which is greater than any of these.

Actually it seems not at all unreasonable to suggest that athletics in moderation will have a tendency towards improving this relative deficit in woman's physical assets. The healthy physical exercise contingent upon any active participation in both training for and competing in athletic events may surely do much towards the production of a generally more efficient body. The human body, be it male or female, requires exercise to stimulate its various physiological functions and to assist it to get rid of its inevitable waste products, and athletics appear to be a very reasonable medium through which this necessary exercise may be obtained. Running and jumping, always provided they are not practised to excess, must help to build up a firmer, stronger, more efficient muscular system. They would tend to alter the fat-muscle ratio in favour of the latter—a point which obviously is not without its cosmetic appeal to the feminine mind! By a gradual process of training, the heart and lungs would develop a correspondingly increased capacity for work, and it would be interesting to know whether nature, with her almost infinite capacity for adjustment to environment, would not also compensate the various increased demands of the other systems by increasing the oxygen-carrying power of the blood with a greater number of corpuscles.

The question of the thyroid and adrenal glands is rather another matter. In the first place these glands, which on the average are relatively larger in women than in men, are responsible by their activity for a generalised speeding-up of all the essential functions of

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the body, and as one of the chief stimuli to activity is intimately related to any condition of nervousness, it is easy to see how the nervous strain incidental to any competitive effort may be responsible for an over-activity of bodily functions, leading, if persisted in, to what is virtually a neurasthenic state. The degree to which this effect becomes noticeable, of course, varies considerably with the individual, but it is undoubtedly a point of considerable interest, and one well worth further investigation.

From the physical point of view there remain only those questions relative to women's own particular functions, and it is especially with regard to the effect of athletics on the future generations yet unborn that many possibly somewhat pessimistic critics have levelled disparaging remarks. Nature has seen fit to make women subject to a series of periodic attacks of being "off-colour" during those years which would normally include all their athletic life, and one can be quite definite in stating that at these times the practice of athletics in any form is bad. And this raises a difficult and interesting point, particularly well exemplified in the last Olympic Games (1928), when women athletes who had travelled some of them thousands of miles for one particular day's competition found themselves inevitably unfit to produce anything like their best performances. It is a difficulty, of course, for which there is no solution, but it is one that needs must be considered in any genuine appreciation of a particular woman athlete's ability.

With regard to the question of the effect of athletics on the future mothers of the race, though this can only be fairly and accurately answered in the fullness of time, there seems to be but one point that needs emphasising, namely moderation. Athletics as a medium through which good healthy exercise can be obtained has everything to recommend it, provided always that the effort involved in participation in any particular

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branch of the sport is never made to excess, to the degree when the effort becomes a strain. For woman's muscular system is so constructed that it is not adaptable to excessive strain, particularly if the productive force be applied suddenly. There are also those who contend that the various jumps, and even hurdling, are bad for women because of the jarring consequent on the necessary movements involved. Personally one feels inclined to the view that nature will automatically obviate any such grievous result by limiting the maximum capable of being produced by the female muscular system.

Thus, summing up from the purely physical point of view, there honestly seems little valid reason why women should not enjoy the benefits that can be derived from athletics, if it is indulged in on a sound common-sense basis. If, however, there is a reasonable limit of effort beyond which, for a woman, the sport becomes a potential danger, should women's athletics be relatively restricted to a definite series of events? At present there are few events, except, perhaps, the longest distances, which they are not essaying, and a woman *has* attempted to run a non-stop Marathon distance of some 26 miles.

In this respect it is of interest to record the events allotted to women at Amsterdam. These were: 100 metres, 800 metres, 4 by 100 metres relay, discus throw, and high jump. After observing that initial experiment, the powers-that-be on the International Amateur Athletic Federation, while deciding to continue women's participation in the Olympic Games, altered their programme to the extent of substituting for the 800 metres an 80 metres hurdle race, and adding an extra event in the javelin throw. The antipathy to the 800 metres race arose from what one is inclined to think was the perfectly natural exhaustion exhibited by many of the competitors. But, nevertheless, one is inclined to agree with the policy that restricts women's competitions to the shorter distances, with, for example, a maximum of a quarter-

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mile, and to those field events where style and technique rather than strength are the important factors—*i.e.* the jumps and the javelin rather than the discus and the shot putt. And this view we put forward despite the facts that the Women's International Federation permits races up to 1000 metres, and that some hold the opinion that the short spasm of rapid running is much more of an effort than the running of a longer distance at a slower pace.

With regard to the mental effect of participation in athletics on women, one must bear in mind their generally more highly-strung nervous system and the effect upon this of the excitement and strain of competition, a matter intimately related to the functions of the various endocrine glands as mentioned above. The really highly-strung girl probably derives little benefit from any athletics, as the good she gets from any physical improvement is dispersed by the nervous strain resulting from her neurasthenic mental make-up.

On the other hand, there is nothing to prevent an average healthy girl from acquiring all the mental assets the sport can give her—control, perseverance, patience, interest and ambition. In some of these respects she is particularly receptive, on the average much more so than men. For instance, a woman is an innate stylist—she enjoys paying what might to many seem wearisome and tedious attention to the minute details of form, and her meticulous care in this direction is largely responsible for the very rapid strides in the right direction which women's athletics has made in recent years.

Another good thing accomplished is the recognition of the genus "sportswoman." Looking back, one can recall during school years the playing of games in which girls perhaps participated on sufferance, and in which there frequently occurred, following some quite unconscious but nevertheless equally heinous misdemeanour, such remarks as—"Oh! it doesn't matter; she's only a girl; she doesn't understand." That now is definitely not the case. A girl is brought up in such an atmosphere

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that she is as fully appreciative of the inherent value of the title "a sport" as is any boy, and not a little of this appreciation comes from the lessons of the athletic track, gleaned either from the experience of personal participation or from that of her teachers—lessons which have taught her how to play the game as an individual against the other individual who is her rival.

So far, it may be felt, we have rather held a brief for women's athletics, so, if only to justify our initial claim to a broad-minded view of the question, may we consider a few points of possible objection, not so much with the idea of these being anything of a deterrent to the movement, but rather as food for thought.

At heart, men like women to be essentially womanly, they like their feminine airs and graces, they like their weakness. And it seems a very moot point as to whether, generally speaking, this liking is enhanced by the sight of their womenfolk indulging in somewhat violent effort, garbed in peculiarly masculine garments.

Again, we do not pretend to pose as beauty specialists, but whether athletics with their attendant increased muscular development is going to improve the grace of the female figure is a point which surely it behoves the woman athlete to consider seriously. And yet again, whilst completely dissociating ourselves from any prudish principles, is not the æsthetic effect of the girl athlete in the hands of the male trainer and the male masseur—a situation almost inevitable in the present stage of development of the sport—rather poor?

This is really neither simply an expression of a Victorian trend of thought, nor yet a merely selfishly male outlook, for the matter is actually a very serious one, and goes much deeper than the mere superficialities of appearances. We, as men, are brought up to have a very deep-rooted sense of appreciation of woman. And it is really more than appreciative, it is respectful, not so much of her beauty, her purity, or her idealism, but rather for the composite sum of all those attributes

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which are so exclusively women's property—her femininity. Simply by the possession of this intangible quality she exercises a prerogative amongst us which should be most jealously guarded. This is the basis of the conception of chivalry, and however prone we are to eulogise what, so often to cover faults, obvious and otherwise, we lightly call the modern equality between the sexes, it is hard to believe that any of us would willingly see the passing of what little the conditions of to-day have still left us of the noble age of chivalry. For the ideal is admittedly already to some extent sullied, as, for instance, is only too painfully evident in any tube train during "rush hours," and it should be a matter of the highest importance for those in whose hands the control of women's athletics lies to consider whether participation will not tend, in the long run, though perhaps at first almost imperceptibly, to lessen the respect in which woman is held by man. One tends rather to picture woman as a devotee of the finer arts—and in all ages she was the inspiration productive of the world's greatest efforts in sculpture, in verse and in painting—as playing by nature a passive part in the sterner and harder battles of life; as indicative of the peace, the gentleness, the love in this world of ours; and, above all, as embodying the ideals of the most perfect function of the human body, motherhood.

We do not wish nor do we intend to stress this aspect unduly, but one does feel that much of the undeniable antipathy which exists towards the idea of women's athletics is based, not so much upon any material objection that can be raised, but upon a deeply ingrained belief that the sport may threaten not only the nature but the very existence of those illusive, ephemeral, but ever beautiful ideals of time immemorial which are probably—along with those of honour and of truth—the finest conceptions of which the human mind is capable.

However, one recognises that these are possibly not the

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average thoughts of the average day in this enlightened age, and if man's attitude towards woman, combined with the forced, artificial and still somewhat abnormal conditions of the present post-War era, have allowed woman to set her foot on a rather headlong path, we must not be surprised that part of that path coincides with the cinder track.

But, nevertheless, even should women athletes decide to shoulder the responsibility for neglect of any such considerations as the above, they must, because of these considerations, be prepared to weather what we feel will be a rather long period during which—apart from the element of curiosity—their participation in athletics will not meet with universal favour.

However, though one in all fairness admits that these points are of definite importance, particularly from the male point of view, if women's athletics progresses on the lines and at the rate of to-day it will not be long before it finds a very definite place in the world of sport, a place in which it can be a very distinct power for good.

There is much yet to be learnt, there is much that cannot yet be decided, but one feels that if the sport is always kept as their own particular concern, and limited to the extent that is compatible with their physical and mental equipment, then women will find in it much of advantage to themselves, whilst at the same time being an undoubted credit to the finest principles of the "game."

Section 2.—Athletics for Boys

In this world of ours to-day, where life is relatively a much more hectic business than it was a generation or two ago, where men, to be successful, must be just as well equipped in every respect as is possible on the basis of their hereditary attributes, it is becoming more and more essential that a boy's training should be as comprehensive as the knowledge and experience of those in whose hands it lies can make it.

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And it is becoming ever more widely recognised by both parents and school authorities alike that athletics offers a field for supplying a very vital part of this training, unsurpassed by any other sport and, taking a very broad view, one might almost venture to say, even by the schoolroom itself !

Running has an unquestionable appeal to every boy. The first thing he does after learning to walk is to learn to run. And probably the first competitive effort he ever makes in his life is in a running race. In this respect running may be said to be almost born and bred in a boy, and though of later years various other sports have somewhat usurped the place of athletics in popularity, it is of considerable interest to note that as a sport in schools it has not only continued as a staple product, as an integral part of any curriculum, but has recently shown a most encouraging recrudescence indicative of its appeal to the average boy. One school may specialise in "rugger," another in "soccer"; one may turn out oarsmen, another tennis players, or swimmers or golfers; but one and all, probably without exception, hold their annual athletic sports function.

This fact alone must serve to show the universal acceptance of the sport as a highly important factor in a boy's training. It serves such an all-round purpose; it produces that gradual physical development which, by building up a sound constitution, gives the boy the right physical basis for the rest of his life; it teaches him to use his brain and stimulates his budding mental faculties; and, perhaps most important of all, it helps to form his character in the right way by showing him the essential value of self-discipline and self-control, of patience and of perseverance, and by teaching him the intrinsic meaning of that all-encompassing word "sportsman."

At all costs for boys athletics must be taught and must be looked upon as essentially a "game," played not for any material reward, not even for the kudos resulting from it, but just plainly and simply for the game's sake.

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One should attempt always to emphasise the fact that to be considered a "real sport" by one's fellows is actually the best prize of all. And most boys are at heart natural sportsmen. It is only various unfortunate conditions which have grown up in the majority of schools that in any way jeopardise, if only to a superficial extent, the mass production in our schools of boys inculcated with all the truest and finest ideals of sport. One refers in particular to the existence of extensive prize-lists, and to the "Victor Ludorum" principle.

With regard to the former, the thing one wants most to avoid with boys is any tendency to "pot-hunting." The system of challenge cups, held for a definite period, and if possible retained somewhere in the school, has everything to recommend it. Beyond this the prize-list should be reduced to a minimum. A boy should be educated up to wanting to win a race for the sake of winning it, not for the sake of the cup or medal attached to the victory.

As for the "Victor Ludorum" question, one can but hope that with the wider knowledge and experience now prevalent amongst teachers, and, one hopes, amongst boys too, the competition for this title will slowly but surely disappear. Presumably it originated in a desire to recognise the ability of the "all-round" athlete, and, whilst holding no brief for that specialisation in athletics which seems to lead so inevitably to the sport becoming more or less of a business proposition, one must recognise as a fundamental fact in regard to boys' athletics that any excessive effort is to be most definitely deprecated. Not only do overstrain and overexertion, which must be almost a corollary to the efforts of any "Victor Ludorum," mean definite detrimental effects on a boy's physical constitution, but also they tend to make him highly strung and nervous, and to give him false ideas about the basic principles of the sport.

In a very excellent little book published recently, purely on the subject of athletics for boys, the author has

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stressed throughout the importance of aiming at correct tuition in style, in form and technique, rather than encouraging the establishment of record performances, particularly on the wholesale scale—and one cannot do better here than to reiterate this as the soundest of bases on which to tackle the subject.

It is a well-known fact that very, very few indeed of those who at school have been acclaimed “Victor Ludorum” have maintained their success in later life. A boy’s constitution will not stand excesses of forced effort, and any premature success he may have in early life is but too often paid for in future years with disappointment at least, if not with anything more serious. The boy who gives evidence of any particular prowess at school is the one who demands especially careful nursing, whose natural ability should be deliberately retarded, that it may come to its full maturity at that stage of his development when it is more capable of doing itself full justice.

In this respect one would most emphatically advocate the limitation in schools of the maximum number of events in which any boy should be allowed to compete in any one day, and also the thorough medical examination of every boy participating in athletics, not so much on the actual day of competition, but rather at the beginning of a definite period of preparation for that competition.

Equally emphatically does one deprecate the system of compulsory athletics, particularly the ubiquitous, and one might almost venture to say iniquitous, “house-run,” by which all and sundry, willy-nilly, are forced to efforts for which they may not only have a distinct dislike, but also for which they may be definitely unfitted.

As compensation for the effect these suggested restrictions would admittedly have upon Inter-House competitions, may one put forward a plea for the adoption of what may be termed, for lack of a better name, “standard competitions,” the basis of which idea

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is that each House scores points according to the number of boys it can produce, either in one particular meeting or, even better, over a complete term or athletic season, relative to the number competing who can attain to a set standard performance in the particular event or events in which they take part. This system, whilst still permitting a basis for competitive effort between Houses, obviates any necessity for excessive effort and the possible detrimental results appertaining thereto.

The boy forms a most productive field for the furtherance of athletic progress, for he is essentially so much virgin soil in which it is possible to plant all that is best in the sport. And when one considers the more far-reaching possibilities, as touched on in a preceding paragraph, offered by athletics in respect of its potential effect upon the future manhood of the nation, apart altogether from the natural desire to uphold and improve the nation's athletic prestige, surely it is incumbent upon school authorities to see that amongst their staff is at least one who can impart lucidly and satisfactorily the essential rudiments of the sport.

A boy is made of such malleable stuff that he is easily taught anything which appeals to him at all. And if he be taught well, he automatically forms habits which are of inestimable value to him, not only in his future athletic career, but in his life generally. He is very receptive of detail, hence the importance of starting him off on a sound foundation as regards style and technique. If he learns the rudiments thoroughly and well at school, he will grow up to his later athletic life, be it at 'Varsity or elsewhere, with the greatest of all possible assets. Faults are comparatively easy to eradicate in the boy, almost impossible, very often, to get rid of in the adult. And for the young athlete training need not present the same arduous aspect that it often does to an older man. A normal boy's life ensures his being relatively fit all the time, and hence liberties in training, such as participation in other sports and comparative freedom in regard to

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diet, are permissible to him then as they would not be in later years. The two great requisites for a boy's training are, first, his full and ample allowance of sleep, and secondly, common sense, both on his part and his teacher's.

There is really no reason why boys' athletics should not cover the complete range of any ordinary programme up to a mile in track events, and also suitably modified field events, the latter including even the so-called "heavy-weight" events, provided always that it is remembered that it is perfection of technique rather than development of exceptional prowess that is being aimed at. But every event must be taught from the first as it will be practised ultimately, and any modifications necessary to the age, stature or physique of the boys concerned must be such that they do not interfere with the essentials of any particular event. It is most encouraging to see the field events being properly and scientifically taught at many schools now, for there is no doubt that our somewhat distressing inferiority, as considered on an international basis in this branch of athletics, has been due to a lack or absence of tuition in schools. There is really no reason why the school weight-putter should be the heaviest "rigger" forward, or the "number six" of the school eight performing inefficiently for one day in the year at the annual sports! Weight-putting, if well taught, is quite an interesting event, and a well-developed boy using a 12 or 14-lb. shot is quite capable of producing a 37 or 38 feet effort, provided he is willing to learn the right technique and to practise it.

In this respect, with regard to field events especially, but also to all events, we cannot stress too strongly the invaluable influence of visits from notable athletes to a school. The boy is a natural hero-worshipper, and he will probably learn as much in an hour from watching a man who has an established reputation as an exponent of some particular branch of athletics as he will in a term

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from teaching. The Achilles Club have done a great deal in recent years towards making this lecture-demonstration idea a feasible possibility, and it is an example which is being, and one hopes will be further, taken up by other clubs in the country. The same club is also largely responsible for the introduction into the schools of the relay system of athletics, a system which for boys is most eminently suitable in that, by emphasising the essential value of the team spirit in athletics, it removes what was, perhaps, the one great drawback to the sport, namely the tendency towards the personal and selfish outlook.

With the further spread of the already popular relay system, and with the advent of masters whose personal experience makes them adequately equipped to act as athletic coaches, one can hope for much from the future of boys' athletics, much that will serve not only to raise the general athletic standard in the country, and correspondingly her international prestige, but also to produce a future manhood relatively better fitted to meet the demands of a modern civilisation.

APPENDIX

RECORDS AND STATISTICS

WORLD'S RECORDS

RUNNING

Event.	Time or Distance.	Holder and Nationality.	Date.	Place.
Yards.	M. S.			
100	9 $\frac{3}{4}$	{ D. J. Kelly (U.S.A.). H. P. Drew (U.S.A.). C. W. Paddock (U.S.A.). C. H. Coaffee (Canada). C. Bowman (U.S.A.). R. E. Walker (S. Africa).	23.6.06 28.3.14 26.3.21 12.8.22 2.7.27 26.12.08	U.S.A. U.S.A. U.S.A. Canada. U.S.A. S. Africa.
120	11 $\frac{3}{4}$	{ C. H. Coaffee (Canada). R. A. Locke (U.S.A.).	4.9.22 1.5.26	Canada. U.S.A.
220	20 $\frac{3}{4}$	{ B. J. Wefers (U.S.A.). G. M. Butler (Gt. Britain).	26.9.96 26.6.26	U.S.A. England.
300	30 $\frac{3}{4}$	M. W. Long (U.S.A.).	4.10.00	U.S.A.
440	47*	J. E. Meredith (U.S.A.).	27.10.16	U.S.A.
	47 $\frac{3}{4}$	{ M. W. Sheppard (U.S.A.). C. N. Seedhouse (Great Britain).	14.8.10 29.9.13	U.S.A. England.
500	57 $\frac{3}{4}$	D. G. A. Lowe (Gt. Britain).	26.6.26	England.
600	1 10 $\frac{3}{4}$	O. Peltzer (Germany).	3.7.26	England.
880	1 51 $\frac{3}{4}$	L. Brown (U.S.A.).	11.6.21	U.S.A.
1000	2 12 $\frac{1}{4}$	T. P. Conneff (U.S.A.).	21.8.95	U.S.A.
1320	3 2 $\frac{1}{4}$			
Miles.				
1	4 10 $\frac{3}{4}$	P. Nurmi (Finland).	23.8.23	Sweden.
2	9 1 $\frac{3}{4}$	E. Wide (Sweden).	12.9.26	Germany.
3	14 11 $\frac{1}{4}$	P. Nurmi (Finland).	24.8.23	Sweden.
4	19 15 $\frac{3}{4}$	P. Nurmi (Finland).	1.10.24	Finland.
5	24 6 $\frac{1}{4}$	P. Nurmi (Finland).	1.10.24	Finland.
6	29 59 $\frac{3}{4}$	A. Shrubb (Gt. Britain).	5.11.04	England.
7	35 4 $\frac{3}{4}$	A. Shrubb (Gt. Britain).	5.11.04	England.
8	40 16	A. Shrubb (Gt. Britain).	5.11.04	England.
9	45 27 $\frac{3}{4}$	A. Shrubb (Gt. Britain).	5.11.04	England.
10	50 15 $\frac{1}{4}$	P. Nurmi (Finland).	7.10.28	Germany.
	h. m. s.			
15	1 20 4 $\frac{3}{4}$	F. Appleby (Gt. Britain).	21.7.02	England.
20	1 51 54	G. Crossland (Gt. Britain).	22.9.94	England.
25	2 29 29 $\frac{3}{4}$	H. Green (Gt. Britain).	12.5.13	England.
Hours.	Miles yds.			
1	11 1648 $\frac{1}{4}$	P. Nurmi (Finland).	7.10.28	Germany.
2	20 952	H. Green (Gt. Britain).	12.5.13	England.

* Straight track.

† Not yet authenticated.

ATHLETICS

RUNNING

Metric Distances

A Comparative Table of Metres and Yards will be found on page 360.

Event.	Time or Distance.	Holder and Nationality.	Date.	Place.
Metres.	M. S.			
100	10 $\frac{1}{4}$ †	{ C. W. Paddock (U.S.A.). H. Körnig (Germany).	23.4.21 8.8.26	U.S.A. Germany.
200	20 $\frac{1}{2}$	R. A. Locke (U.S.A.).	1.5.26	U.S.A.
300	33 $\frac{1}{2}$	C. W. Paddock (U.S.A.).	23.4.21	U.S.A.
400	47 $\frac{1}{2}$	J. E. Meredith (U.S.A.).	27.10.16	U.S.A.
500	1 3 $\frac{1}{2}$	O. Peltzer (Germany).	6.6.26	Germany.
800	1 50 $\frac{3}{8}$	S. Martin (France).	14.7.28	France.
1,000	2 25 $\frac{1}{2}$	O. Peltzer (Germany).	18.9.27	France.
1,500	3 51	O. Peltzer (Germany).	11.9.26	Germany.
2,000	5 23 $\frac{1}{2}$	E. Borg (Finland).	9.8.27	Finland.
3,000	8 20 $\frac{1}{2}$	P. Nurmi (Finland).	13.7.26	Finland.
5,000	14 28 $\frac{1}{2}$	P. Nurmi (Finland).	19.6.24	Finland.
10,000	30 6 $\frac{1}{2}$	P. Nurmi (Finland).	31.8.24	Finland.
Kilos.				
15	46 49 $\frac{1}{4}$ †	P. Nurmi (Finland).	7.10.28	Germany.
	h. m. s.			
20	1 6 29	V. Sipilä (Finland).	10.6.25	Sweden.
25	1 25 20	T. Kolehmainen (Finland).	22.6.22	Finland.
30	1 46 11 $\frac{1}{2}$	A. Stenroos (Finland).	31.8.24	Finland.
Hours.	Metres.			
$\frac{1}{2}$	9,957	P. Nurmi (Finland).	31.8.24	Finland.
1	19,210†	P. Nurmi (Finland).	7.10.28	Germany.
2	33,056	H. Green (Great Britain).	12.5.13	England.

† Not yet authenticated.

WALKING

Event.	Time or Distance.	Holder and Nationality.	Date.	Place.
Miles.	M. S.			
1	6 25 $\frac{1}{2}$	G. H. Goulding (Canada).	4.6.10	Canada.
2	13 11 $\frac{1}{2}$	G. E. Larner (Gt. Britain).	13.7.04	England.
3	20 25 $\frac{1}{2}$	G. E. Larner (Gt. Britain).	19.8.05	England.
4	27 14	G. E. Larner (Gt. Britain).	19.8.05	England.
5	36 $\frac{1}{2}$	G. E. Larner (Gt. Britain).	30.9.05	England.
6	43 26 $\frac{1}{2}$	G. E. Larner (Gt. Britain).	30.9.05	England.
7	50 40 $\frac{1}{2}$	G. H. Goulding (Canada).	23.10.15	U.S.A.
8	58 18 $\frac{1}{2}$	G. E. Larner (Gt. Britain).	30.9.05	England.
	h. m. s.			
9	1 7 37 $\frac{1}{2}$	G. E. Larner (Gt. Britain).	17.7.08	England.
10	1 15 57 $\frac{1}{2}$	G. E. Larner (Gt. Britain).	17.7.08	England.
15	1 59 12 $\frac{1}{2}$	H. V. L. Ross (Gt. Britain).	20.5.11	England.
20	2 47 52	T. Griffith (Gt. Britain).	30.12.07	England.
25	3 37 6 $\frac{1}{2}$	S. C. A. Schofield (Gt. Brit.).	20.5.11	England.
Hours.	Miles yds.			
1	8 438	G. E. Larner (Gt. Britain).	30.9.05	England.
2	15 128	H. V. L. Ross (Gt. Britain).	20.5.11	England.

RECORDS AND STATISTICS

WALKING Metric Distances

Event.	Time or Distance.	Holder and Nationality.	Date.	Place.
Metres.	M. S.			
3,000	12 53 $\frac{1}{2}$	G. Rasmussen (Denmark).	7.7.18	Denmark.
5,000	21 5 $\frac{1}{2}$	H. Müller (Germany).	5.8.21	Denmark.
10,000	45 26 $\frac{3}{8}$	G. Rasmussen (Denmark).	18.8.18	Denmark.
	h. m. s.			
15,000	1 10 23	G. Rasmussen (Denmark).	9.5.18	Denmark.
20,000	1 37 42 $\frac{1}{2}$	D. Pavesi (Italy).	10.4.27	Italy.
25,000	2 5 12 $\frac{3}{8}$	P. Siewert (Germany).	14.4.27	Germany.
Hour.	Metres.			
1	13,275	G. E. Larner (Gt. Britain).	.05	England.

JUMPING

Event.	Distance.	Holder and Nationality.	Date.	Place.
Standing High Jump	Ft. ins. Metres. 5 5 $\frac{1}{2}$	L. Goehring (U.S.A.).	14.6.1	U.S.A.
High Jump	6 8 $\frac{1}{4}$ 2.04	H. M. Osborne (U.S.A.).	27.5.24	U.S.A.
Standing Broad Jump	11 4 $\frac{7}{8}$	R. C. Ewry (U.S.A.).	29.8.04	U.S.A.
Broad Jump	25 11 $\frac{1}{2}$ * 7.90	E. B. Hamm (U.S.A.).	7.7.28	U.S.A.
Running Hop, Step and Jump	50 11 $\frac{5}{8}$ 15.525	A. W. Winter (Australia).	12.7.24	France.
Pole Vault	14 1† 4.29	S. Carr (U.S.A.).	28.5.27	U.S.A.

* 26 ft. (7.93) by S. Cator (Haiti) 9.9.28 not yet authenticated.

† 14 ft. 1 $\frac{1}{2}$ ins. (4.31) by L. Barnes (U.S.A.) 28.4.28 not yet authenticated.

WEIGHT EVENTS

Putting the 16-lb. Weight—	Ft. ins. Metres.			
Best hand	52 3 $\frac{1}{2}$ * 15.87	J. Kuck (U.S.A.).	29.7.28	Holland.
Both hands	91 10 $\frac{1}{2}$	R. Rose (U.S.A.).	2.6.12	U.S.A.
(Right hand	50 6			
Left hand	41 4 $\frac{1}{2}$)			
Throwing 56-lb. Weight	40 6 $\frac{3}{8}$	M. McGrath. (U.S.A.).	23.9.11	U.S.A.
Throwing 16-lb. Hammer	189 6 $\frac{1}{2}$ 57.78	P. Ryan (U.S.A.).	17.8.13	U.S.A.

* 52.7 $\frac{1}{2}$ (16.045) by E. Hirschfeld (Germany) 26.8.28 not yet authenticated.

ATHLETICS

THROWING THE DISCUS

Event.	Distance.	Holder and Nationality.	Date.	Place.
Best hand	Ft. ins. Metres. 158 1½* 48·20	C. Houser (U.S.A.).	3.4.26	U.S.A.
Both hands	295 8½	E. Niklander (Finland).	1913	Finland.
(Right hand	149 6½			
Left hand	146 2½)			

* 160.½ (48.775) by H. Hoffmeister (Germany) 22.7.28 not yet authenticated.

THROWING THE JAVELIN

Best hand	Ft. ins. Metres. 232 11¼ 71·01†	E. H. Lundkvist (Sweden).	15.8.28	Sweden.
Both hands	374 11½	Y. Häckner (Sweden).	30.9.17	Sweden.

† Not yet authenticated.

HURDLES

Event.	Time.	Holder and Nationality.	Date.	Place.
Yds. 120	Secs. 14½	E. J. Thomson (Canada).	29.5.20	U.S.A.
220 (2'6" hurdles)	23	C. R. Brookins (U.S.A.).	17.5.24	U.S.A.
440 (3' hurdles)	52½	J. A. Gibson (U.S.A.).	2.7.27	U.S.A.

HURDLES

Metric Distances

Metres. 110	Secs. 14½	G. C. Weightman-Smith (South Africa).	31.7.28	Holland.
200	23	C. R. Brookins (U.S.A.).	17.5.24	U.S.A.
400	52	H. M. Taylor (U.S.A.).	7.7.28	U.S.A.

RELAY RACES

Event.	Time.	Holders.	Date.	Place.
Yds. 4 × 100	Secs. 37½	U.S.A. Team : C. W. Pad- dock, J. V. Scholz, C. Bowman, J. E. Leconey.	19.7.24	England.
		U.S.A. Team : F. Wykoff, J. Quinn, L. Cumming, H. A. Russell.	11.8.28	England.
4 × 110	41	Newark A.C., U.S.A. : Bow- man, Currie, Pappas, Cummings.	4.7.27	U.S.A.

RECORDS AND STATISTICS

RELAY RACES—*continued.*

Event.	Time.	Holders.	Date.	Place.
Yds.	M. S.			
4 × 220	1 25 $\frac{1}{2}$	University of So. California, U.S.A. : C. E. Borah, E. House, H. Smith, W. Lewis.	14.5.27	U.S.A.
4 × 440	3 13 $\frac{3}{4}$ †	U.S.A. Team : G. Baird, H. M. Taylor, R. Barbuti, E. Spencer.	11.8.28	England.
4 × 880	7 41 $\frac{1}{2}$	Boston A.A., U.S.A. : C. Sansone, L. Welch, S. H. Martin, L. Hahn.	6.7.26	U.S.A.
4 × 1 Mile	17 21 $\frac{1}{2}$	University of Illinois, U.S.A. : E. Krogh, R. Watson, R. Buker, J. Ray.	23.6.23	U.S.A.
Medley (440, 220, 220, 880)	3 22 $\frac{3}{4}$	British Empire Team : P. Edwards, W. Rangeley, J. Fitzpatrick, D. G. A. Lowe.	11.8.28	England.
Medley (Mile, 220, 440, 880)	7 25 $\frac{1}{2}$	New York A.C., U.S.A. : W. Goodwin, J. V. Scholz, J. Tierney, G. Marsters.	26.9.25	U.S.A.
Medley (440, 880, 1320, mile)	10 15 $\frac{1}{2}$	Penn. State College, U.S.A. : D. B. Taylor, A. B. Hel- ffrich, J. Enck, L. M. Shields.	13.5.22	U.S.A.
Hurdles (4 × 120) (run to and fro)	1 1 $\frac{3}{4}$	U.S.A. Team : H. G. Guthrie, J. Anderson, C. W. Moore, D. Kinsey.	19.7.24	England.

† Not yet authenticated.

RELAY RACES *Metric Distances*

Event.	Time.	Holders.	Date.	Place.
Metres.	M. S.			
4 × 100	41	U.S.A. Olympic Team : L. Clark, F. Hussey, L. Murchison, A. Leconey U.S.A. Olympic Team : F. Wykoff, J. Quinn, C. E. Borah, H. A. Russell.	13.7.24	France.
		Eintracht Frankfurt, Germany.	5.8.28	Holland.
			10.6.28	Germany.
4 × 200	1 25 $\frac{1}{2}$	University of So. California, U.S.A. : C. E. Borah, E. House, H. Smith, W. Lewis.	14.5.27	U.S.A.
4 × 400	3 14 $\frac{1}{2}$	U.S.A. Olympic Team : G. Baird, F. Alderman, E. Spencer, R. Barbuti.	5.8.28	Holland.
4 × 800	8 1	Teutonia-Berlin, Germany : Schmidt, Isermann, Wal- pert, Bocher.	3.9.27	Germany.
4 × 1500	16 11 $\frac{1}{2}$	Finnish Team : Kouvuunaho, E. Katz, Liewendahl, P. Nurmi.	17.7.26	Finland.

ATHLETICS

DECATHLON

Event.	Holder and Nationality.	Place.	Date.
Points. 8053·29	P. Yrjöla (Finland).	Holland.	4 & 5.8.28

OLYMPIC RECORDS

Event.	Time or Distance.	Holder and Nationality.	Place.	Date.
Metres.	M. S.			
100	10 $\frac{3}{8}$	{ D. F. Lippincott (U.S.A.). H. M. Abrahams (Great Britain). P. Williams (Canada). R. McAllister (U.S.A.). J. E. London (Gt. Britain). A. Hahn (U.S.A.).	Stockholm. Paris. Amsterdam. Amsterdam. Amsterdam. St. Louis.	1912 1924 1928 1928 1928 1904
200	21 $\frac{3}{8}$	{ J. V. Scholz (U.S.A.). H. Körnig (Germany)	Paris. Amsterdam.	1924 1928
400	47 $\frac{3}{8}$	E. H. Liddell (Gt. Britain).	Paris.	1924
800	1 51 $\frac{1}{8}$	D. G. A. Lowe (Gt. Britain).	Amsterdam.	1928
1,500	3 53 $\frac{1}{8}$	H. E. Larva (Finland).	Amsterdam.	1928
5,000	14 31 $\frac{1}{8}$	P. Nurmi (Finland).	Paris.	1924
10,000	30 18 $\frac{3}{8}$	P. Nurmi (Finland).	Amsterdam.	1928
400 Relay (4 × 100)	41	{ U.S.A. { L. Clark F. Hussey L. Murchison } { A. Leconey F. Wykoff J. Quinn C. E. Borah H. A. Russell }	Paris. Amsterdam.	1924 1928
1,600 Relay (4 × 400)	3 14 $\frac{1}{8}$	{ U.S.A. { G. Baird F. Alderman E. Spencer R. Barbuti }	Amsterdam.	1928
3,000 Team race	8 32	{ Finland. { P. Nurmi W. Ritola } { E. Katz }	Paris.	1924
10,000 Walk	46 28 $\frac{3}{8}$	G. H. Goulding (Canada).	Stockholm.	1912
110 Hurdles	14 $\frac{1}{8}$	G. C. Weightman-Smith (S. Africa).	Amsterdam.	1928
400 Hurdles	53 $\frac{3}{8}$ *	Lord Burghley (Gt. Britain).	Amsterdam.	1928
High Jump	Ft. ins. Metres. 6 6 1·98	H. M. Osborne (U.S.A.).	Paris.	1924
Long Jump	25 4 $\frac{1}{4}$ † 7·73	E. B. Hamm (U.S.A.)	Amsterdam.	1928
Hop, Step and Jump	50 11 $\frac{1}{8}$ 15·525	A. W. Winter (Australia).	Paris.	1924
Pole Jump	13 9 $\frac{1}{4}$ 4·203	S. Carr (U.S.A.).	Amsterdam.	1928
Throwing the Javelin	218 6 $\frac{1}{4}$ 66·605	E. H. Lundkvist (Sweden).	Amsterdam.	1928

* H. M. Taylor, (U.S.A.), won in 52 $\frac{3}{8}$ at Paris in 1924, but knocked down a hurdle.

† R. L. Legendre (U.S.A.) jumped 25 ft. 6 ins. in the Pentathlon competition at Paris in 1924.

RECORDS AND STATISTICS

OLYMPIC RECORDS—continued.

Event.	Time or Distance.	Holder and Nationality.	Place.	Date.
Throwing the Discus	Ft. ins. Metres. 155 3 47·325	C. Houser (U.S.A.).	Amsterdam.	1928
Throwing the Hammer	179 7½ 54·74	M. J. McGrath (U.S.A.).	Stockholm.	1912
Putting the Weight	52 ¾ 15·87	J. Kuck (U.S.A.).	Amsterdam.	1928
Pentathlon	Points. 14	E. R. Lehtonen (Finland).	Antwerp.	1920
Decathlon	8053·29	P. Yrjölä (Finland).	Amsterdam.	1928

OLYMPIC TRACK AND FIELD CHAMPIONS

1896—ATHENS.	1906—ATHENS.*	1920—ANTWERP.
1900—PARIS.	1908—LONDON.	1924—PARIS.
1904—ST. LOUIS.	1912—STOCKHOLM.	1928—AMSTERDAM.

60 METRES RUN		Secs.	400 METRES RUN		Secs.
1900 A. C. Kraenzlein, U.S.A.		7	1896 T. E. Burke, U.S.A.	....	54½
1904 A. Hahn, U.S.A.	....	7	1900 M. W. Long, U.S.A.	...	49½
			1904 H. L. Hillman, U.S.A.	....	49½
			1906 P. Pilgrim, U.S.A.	....	53½
			1908 W. Halswelle, Gt. Britain	....	50
1896 T. E. Burke, U.S.A.	....	12	1912 C. D. Reidpath, U.S.A.	....	48½
1900 F. W. Jarvis, U.S.A.	...	10½	1920 B. G. D. Rudd, S. Africa	....	49½
1904 A. Hahn, U.S.A.	....	11	1924 E. H. Liddell, Gt. Britain	....	47½
1906 A. Hahn, U.S.A.	....	11½	1928 R. Barbuti, U.S.A.	....	47½
1908 R. E. Walker, S. Africa	....	10½			
1912 R. C. Craig, U.S.A.	....	10½			
1920 C. W. Paddock, U.S.A.	....	10½			
1924 H. M. Abrahams, Gt. Britain	....	10½			
1928 P. Williams, Canada	....	10½			
200 METRES RUN.			800 METRES RUN		m. s.
1900 J. W. B. Tewksbury, U.S.A.	....	22½	1896 E. H. Flack, Gt. Britain	2	11
1904 A. Hahn, U.S.A.	....	21½	1900 A. E. Tysoe, Gt. Britain	2	1½
1908 R. Kerr, Canada	...	22½	1904 J. D. Lightbody, U.S.A.	1	56
1912 R. C. Craig, U.S.A.	....	21·7	1906 P. Pilgrim, U.S.A.	....	2 1½
1920 A. Woodring, U.S.A.	....	22	1908 M. W. Sheppard, U.S.A.	1	52½
1924 J. V. Scholz, U.S.A.	....	21½	1912 J. E. Meredith, U.S.A.	1	51·9
1928 P. Williams, Canada	....	21½	1920 A. G. Hill, Gt. Britain	1	53½
			1924 D. G. A. Lowe, Gt. Britain	....	1 52½
			1928 D. G. A. Lowe, Gt. Britain	....	1 51½

* Not a regular Olympiad.

ATHLETICS

1,500 METRES RUN

		m. s.
1896	E. H. Flack, Gt. Britain	4 33½
1900	C. Bennett, Gt. Britain	4 6
1904	J. D. Lightbody, U.S.A.	4 5½
1906	J. D. Lightbody, U.S.A.	4 12
1908	M. W. Sheppard, U.S.A.	4 3½
1912	A. N. S. Jackson, Gt. Britain	3 56½
1920	A. G. Hill, Gt. Britain	4 1½
1924	P. Nurmi, Finland	3 53½
1928	H. E. Larva, Finland	3 53½

5,000 METRES RUN

1912	H. Kolehmainen, Finland	14 36½
1920	J. Guillemot, France	14 55½
1924	P. Nurmi, Finland	14 31½
1928	W. Ritola, Finland	14 38

5-MILE RUN

1906	H. Hawtrey, Gt. Britain	26 26½
1908	E. R. Voigt, Gt. Britain	25 11½

10,000 METRES RUN

1912	H. Kolehmainen, Finland	31 20½
1920	P. Nurmi, Finland	31 45½
1924	W. Ritola, Finland	30 23½
1928	P. Nurmi, Finland	30 18½

MARATHON

		h. m. s.
1896	S. Loues, Greece	2 55 20
1900	Teato, France	2 59 0
1904	T. J. Hicks, U.S.A.	3 28 53
1906	W. J. Sherring, Canada	2 51 23½
1908	J. J. Hayes, U.S.A.	2 55 18
1912	K. K. McArthur, S. Africa	2 36 54½
1920	H. Kolehmainen, Finland	2 32 35½
1924	A. O. Stenroos, Finland	2 41 22½
1928	El Ouafi, France	2 32 57

* 2' 6" hurdles.

110 METRES HURDLES

		Secs.
1896	Curtis, U.S.A.	17½
1900	A. C. Kraenzlein, U.S.A.	15½
1904	F. W. Schule, U.S.A.	16
1906	R. G. Leavitt, U.S.A.	16½
1908	F. Smithson, U.S.A.	15
1912	F. W. Kelly, U.S.A.	15.1
1920	E. J. Thomson, Canada	14½
1924	D. C. Kinsey, U.S.A.	15
1928	S. J. M. Atkinson, S. Africa	14½

200 METRES HURDLES

1900	A. C. Kraenzlein, U.S.A.	25½
1904	H. L. Hillman, U.S.A.	24½

400 METRES HURDLES

1900	J. W. B. Tewksbury, U.S.A.	57½
1904	H. L. Hillman, U.S.A.	53*
1908	C. J. Bacon, U.S.A.	55
1920	F. F. Loomis, U.S.A.	54
1924	F. M. Taylor, U.S.A.	52½
1928	Lord Burghley, Gt. Britain	53½

2,500 METRES STEEPLECHASE

		m. s.
1900	G. W. Orton, U.S.A.	7 34
1904	J. D. Lightbody, U.S.A.	7 39½

3,000 METRES STEEPLECHASE

1920	P. Hodge, Gt. Britain	10 2½
1924	W. Ritola, Finland	9 33½
1928	R. E. Loukola, Finland	9 21½

3,200 METRES STEEPLECHASE

1908	A. Russell, Gt. Britain	10 47½
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4,000 METRES STEEPLECHASE

1900	C. Rimmer, Gt. Britain	12 58½
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8,000 METRES CROSS-COUNTRY

1912	H. Kolehmainen, Finland	45 11½
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RECORDS AND STATISTICS

10,000 METRES CROSS-COUNTRY

		m. s.
1920	P. Nurmi, Finland	27 15
1924	P. Nurmi, Finland	32 54½

1,500 METRES WALK

1906	G. V. Bonhag, U.S.A.	7 12½
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3,000 METRES WALK

1920	U. Frigerio, Italy	13 14½
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3,500 METRES WALK

1908	G. E. Larner, Gt. Britain	14 55
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10,000 METRES WALK

1912	G. H. Goulding, Canada	46 28½
1920	U. Frigerio, Italy	48 6½
1924	U. Frigerio, Italy	47 49

10-MILE WALK

		h. m. s.
1908	G. E. Larner, Gt. Britain	1 15 57½

400 METRES RELAY

			Secs.
1912	Gt. Britain	....	42½
1920	U.S.A.	....	42½
1924	U.S.A.	....	41
1928	U.S.A.	....	41

1,600 METRES RELAY

			m. s.
1908	U.S.A.	....	3 27½
1912	U.S.A.	....	3 16½
1920	Gt. Britain	....	3 22½
1924	U.S.A.	....	3 16
1928	U.S.A.	....	3 14½

STANDING HIGH JUMP

		ft. ins.
1900	R. C. Ewry, U.S.A.	5 5
1904	R. C. Ewry, U.S.A.	4 11
1906	R. C. Ewry, U.S.A.	5 1½
1908	R. C. Ewry, U.S.A.	5 2
1912	P. Adams, U.S.A.	5 4½

RUNNING HIGH JUMP

		ft. ins.
1896	E. H. Clark, U.S.A.	5 11½
1900	I. K. Baxter, U.S.A.	6 2½
1904	S. S. Jones, U.S.A.	5 11
1906	C. Leahy, Ireland	5 9½
1908	H. F. Porter, U.S.A.	6 3
1912	A. W. Richards, U.S.A.	6 4
1920	R. W. Landon, U.S.A.	6 4½
1924	H. M. Osborne, U.S.A.	6 6
1928	R. King, U.S.A.	6 4½

STANDING BROAD JUMP

1900	R. C. Ewry, U.S.A.	10 6½
1904	R. C. Ewry, U.S.A.	11 4½
1906	R. C. Ewry, U.S.A.	10 10
1908	R. C. Ewry, U.S.A.	10 11½
1912	C. Tsicilitiras, Greece	11 1

RUNNING BROAD JUMP

1896	E. H. Clark, U.S.A.	20 9½
1900	A. C. Kraenzlein, U.S.A.	23 6½
1904	M. Prinstein, U.S.A.	24 1
1906	M. Prinstein, U.S.A.	23 7½
1908	F. Irons, U.S.A.	24 6½
1912	A. L. Gutterson, U.S.A.	24 11½
1920	W. Petterssen, Sweden	23 5½
1924	D. H. Hubbard, U.S.A.	24 6
1928	E. B. Hamm, U.S.A.	25 4½

STANDING HOP, STEP AND JUMP

1900	R. C. Ewry, U.S.A.	34 8½
1904	R. C. Ewry, U.S.A.	34 7½

RUNNING HOP, STEP AND JUMP

1896	J. B. Connolly, U.S.A.	45 0
1900	M. Prinstein, U.S.A.	47 4½
1904	M. Prinstein, U.S.A.	47 0
1906	P. O'Connor, Ireland	46 2
1908	T. J. Ahearne, Gt. Britain	48 11½
1912	G. Lindblom, Sweden	48 5½
1920	V. Tuulos, Finland	47 7
1924	A. W. Winter, Australia	50 11½
1928	M. Oda, Japan	49 11

ATHLETICS

POLE JUMP

		ft.	ins.		ft.	in.
1896	W. W. Hoyt, U.S.A.	10	9 $\frac{1}{2}$	1906	M. J. Sheridan, U.S.A.	136 $\frac{1}{2}$
1900	I. K. Baxter, U.S.A.	10	9 $\frac{1}{2}$ ⁰	1908	M. J. Sheridan, U.S.A.	134 2
1904	C. E. Dvorak, U.S.A.	11	6	1912	A. R. Taipale, Finland	148 3 $\frac{1}{2}$ ⁰
1906	Gouder, France	11	6		Right and left hand—	
1908	{ A. C. Gilbert, U.S.A.	12	2		A. R. Taipale, Finland	271 10 $\frac{1}{2}$
	{ E. T. Cook, Jr., U.S.A.			1920	E. Niklander, Finland	146 7
1912	H. J. Babcock, U.S.A.	12	11 $\frac{1}{2}$	1924	C. Houser, U.S.A.	151 5 $\frac{1}{2}$
1920	F. K. Foss, U.S.A.	13	5	1928	C. Houser, U.S.A.	155 3
1924	L. Barnes, U.S.A.	12	11 $\frac{1}{2}$			
1928	S. Carr, U.S.A.	13	9 $\frac{1}{2}$			

PUTTING THE WEIGHT

1896	R. S. Garrett, U.S.A.	36	2
1900	R. Sheldon, U.S.A.	46	3 $\frac{1}{2}$
1904	R. Rose, U.S.A.	48	7
1906	M. J. Sheridan, U.S.A.	40	4 $\frac{1}{2}$
1908	R. Rose, U.S.A.	46	7 $\frac{1}{2}$
1912	P. J. McDonald, U.S.A.	50	4
	Right and left hand—		
	R. Rose, U.S.A.	90	5 $\frac{1}{2}$
1920	V. Porhola, Finland	48	7 $\frac{1}{2}$
1924	C. Houser, U.S.A.	49	2 $\frac{1}{2}$
1928	J. Kuck, U.S.A.	52	4 $\frac{1}{2}$

56-LB. WEIGHT

1904	E. Desmarteau, Canada	34	4
1920	P. J. McDonald, U.S.A.	36	11 $\frac{1}{2}$

THROWING THE HAMMER

1900	J. J. Flanagan, U.S.A.	167	4
1904	J. J. Flanagan, U.S.A.	168	1
1908	J. J. Flanagan, U.S.A.	170	4 $\frac{1}{2}$
1912	M. J. McGrath, U.S.A.	179	0
1920	P. J. Ryan, U.S.A.	173	5 $\frac{1}{2}$
1924	F. D. Tootell, U.S.A.	174	10 $\frac{1}{2}$
1928	P. O'Callaghan, Ireland	168	7 $\frac{1}{2}$

THROWING THE DISCUS

1896	R. S. Garrett, U.S.A.	95	7 $\frac{1}{2}$
1900	Bauer, Hungary	118	2 $\frac{1}{2}$ ⁰
1904	M. J. Sheridan, U.S.A.	128	10 $\frac{1}{2}$

DISCUS—GREEK STYLE

1906	W. Jaervinen, Finland	115	4
1908	M. J. Sheridan, U.S.A.	124	8

THROWING THE JAVELIN

1906	E. Lemming, Sweden	175	6
1908	E. Lemming, Sweden	178	7 $\frac{1}{2}$
	Held in middle—E. Lemming, Sweden	179	10 $\frac{1}{2}$
1912	E. Lemming, Sweden	198	11 $\frac{1}{2}$
	Right and left hand—		
	J. J. Saaristo, Finland	359	1
1920	J. Myyra, Finland	215	9 $\frac{1}{2}$
1924	J. Myyra, Finland	206	6 $\frac{1}{2}$
1928	E. H. Lundkvist, Sweden	218	6 $\frac{1}{2}$

PENTATHLON

		Pts.
1906	H. Mellander, Sweden	24
1912	F. R. Bie, Norway	16
1920	E. R. Lehtonen, Finland	14
1924	E. R. Lehtonen, Finland	16

DECATHLON

1912	H. Wieslander, Sweden	7,724.495
1920	H. Lovland, Norway	6,804.35
1924	H. M. Osborne, U.S.A.	7,710.775
1928	P. Yrjöla, Finland	8,053.29

RECORDS AND STATISTICS

NATIONAL RECORDS

BRITISH AMATEUR RECORDS

RUNNING

Event.	Time.	Holder.	Where Made.	Date.
Yds.	H. M. S.			
100	9 ¹ / ₁₀	E. H. Liddell.	Stamford Bridge.	7.7.23
120	11 ³ / ₈	R. E. Walker.	Glasgow.	9.8.09
150	14 ³ / ₈	W. R. Applegarth.	Cardiff.	28.6.13
200	19 ³ / ₈	W. R. Applegarth.	Kennington Oval.	14.9.12
220	21 ¹ / ₈	W. R. Applegarth.	Stamford Bridge.	4.7.14
250	24 ³ / ₈	E. H. Pelling.	Stamford Bridge.	22.9.88
300	30 ³ / ₈	G. M. Butler.	Stamford Bridge	26.6.26
440	48 ³ / ₈	W. Halswelle.	Glasgow.	1.7.08
500	57 ³ / ₈	C. N. Seedhouse.	Stamford Bridge.	29.9.13
600	1 10 ³ / ₈	D. G. A. Lowe.	Stamford Bridge.	26.6.26
880	1 51 ³ / ₈	O. Peltzer.	Stamford Bridge.	3.7.26
1000	2 14 ³ / ₈	W. E. Lutyens.	Stamford Bridge.	3.7.98
1320	3 5 ³ / ₈	A. G. Hill.	Salford.	4.6.21
Miles.				
1	4 13 ⁴ / ₈	A. G. Hill.	Stamford Bridge.	2.7.21
2	9 9 ³ / ₈	A. Shrubb.	Glasgow.	11.6.04
3	14 17 ³ / ₈	A. Shrubb.	Stamford Bridge.	21.5.03
4	19 23 ³ / ₈	A. Shrubb.	Glasgow.	13.6.04
5	24 33 ³ / ₈	A. Shrubb.	Stamford Bridge.	12.5.04
6	29 59 ³ / ₈	A. Shrubb.	Glasgow.	5.11.04
7	35 4 ³ / ₈	A. Shrubb.	Glasgow.	5.11.04
8	40 16	A. Shrubb.	Glasgow.	5.11.04
9	45 27 ³ / ₈	A. Shrubb.	Glasgow.	5.11.04
10	50 40 ³ / ₈	A. Shrubb.	Glasgow.	5.11.04
11	56 23 ³ / ₈	A. Shrubb.	Glasgow.	5.11.04
12	1 2 43	S. Thomas.	Herne Hill.	22.10.92
13	1 9 27 ¹ / ₈	F. Appleby.	Stamford Bridge.	21.7.02
14	1 14 52	F. Appleby.	Stamford Bridge.	21.7.02
15	1 20 4 ³ / ₈	F. Appleby.	Stamford Bridge.	21.7.02
20	1 51 54	G. Crossland.	Stamford Bridge.	22.9.94
25	2 29 29 ³ / ₈	H. Green.	Stamford Bridge.	12.5.13
30	3 17 36 ³ / ₈	J. A. Squires.	Balham.	2.5.85
40	4 46 54	J. E. Dixon.	Birmingham.	29.12.84
50	6 13 58	E. W. Lloyd.	Stamford Bridge.	12.5.98
Miles yds.				
11 1137	1 0 0	A. Shrubb.	Glasgow.	20.11.04
20 952	2 0 0	H. Green.	Stamford Bridge.	12.5.13

HURDLES

Event.	Time.	Holder.	Where Made.	Date.
Yds.	Secs.			
*120 (3'6")	14 ¹ / ₁₀	S. J. M. Atkinson.	Stamford Bridge.	7.7.28
220 (2'6")	24 ¹ / ₁₀	Lord Burghley.	Stamford Bridge.	9.7.27
440 (3')	54	Lord Burghley.	Stamford Bridge.	7.7.28

* Made on grass. The record on cinders is 14⁴/₁₀, held jointly by Lord Burghley (11.6.27, at Cambridge) and G. C. Weightman-Smith (23.6.28, at Oxford).

ATHLETICS

FIELD EVENTS

Event.	Distance.	Holder.	Where Made.	Date.
	ft. ins.			
High Jump	6 5	B. H. Baker.	Huddersfield.	25.6.21
Long Jump	25 1	E. B. Hamm.	Stamford Bridge.	11.8.28
Pole Jump	13 9	L. Barnes.	Stamford Bridge.	11.8.28
Hop, Step and Jump	50 9	W. Peters.	Stamford Bridge.	4.7.27
Hammer Throw	178 11	F. D. Tootell.	Stamford Bridge.	19.7.24
Weight Putting	49 10½	R. G. Hills.	Stamford Bridge.	19.7.24
Javelin Throw	222 9	S. A. Lay.	Stamford Bridge.	7.7.28
Discus Throw	147	E. Paulus.	Stamford Bridge.	7.7.28

RELAY RACES

Event.	Time.	Holders.	Date.
Yds.	M. S.		
4 × 100	37½	U.S.A. Team (C. W. Paddock, J. V. Scholz, C. Bowman, J. E. Leconey).	19.7.24
4 × 110	42½	U.S.A. Team (F. Wykoff, J. Quinn, L. Cumming, H. A. Russell).	11.8.28
4 × 220	1 29½	C. F. C. Preussen Krefeld, Germany.	4.7.27
4 × 440	3 13½	(Salz, Werusing, H. Houben, J. Schüller).	
4 × 880	7 48½	U.S.A. Team (G. Baird, H. M. Taylor, R. Barbuti, E. Spencer).	11.8.28
4 × 1 mile	17 22½	British Empire Team (B. Little, N. J. McEachern, P. Edwards, D. G. A. Lowe).	11.8.28
Medley (440, 220, 220, 880)	3 22½	British Empire Team (A. Docherty, R. S. Starr, W. M. Whyte, C. Ellis).	11.8.28
4 × 120 hurdles (run to and fro)	61½	British Empire Team (P. Edwards, W. Rangeley, J. Fitzpatrick, D. G. A. Lowe).	11.8.28
		U.S.A. Team (H. G. Guthrie, J. Anderson, C. W. Moore, D. Kinsey).	19.7.24

With the exception of the 4 × 110 yards and 4 × 220 yards relays, all these records were made in the matches between the United States and British Empire Teams at Stamford Bridge after the Olympic Games in 1924 and 1928.

AMERICAN RECORDS

NOTE.—Indoor athletics play so prominent a part in America that it has been thought proper to give the records for both outdoor and indoor meetings. It will be noticed that the records made indoors bear a curious relationship to those made in the open, inasmuch as they are much inferior in the short distances, improve to an equality in the middle distances, and become markedly superior in the long distances. The ex-

RECORDS AND STATISTICS

planation is probably twofold. First, that the small tracks, which often measure only 300 yards in circumference, involve more cornering, which militates against fast times; and secondly, that the warmer atmosphere and possibly the resilience of the board track render the longer distance runner less fatigued.

RUNNING

Event.	Time or Distance.		Holder.	Where Made.	Date.
Yds.	M.	S.			
*60		6 $\frac{1}{2}$	{ L. Murchison. A. Francisco. C. Bowman.	New York. Chicago. Chicago.	31.1.23 6.3.26 6.3.26
100		9 $\frac{3}{8}$	{ D. J. Kelly. H. P. Drew. C. W. Paddock. C. Bowman.	Spokane, Wash. Berkeley, Cal. Berkeley, Cal. Lincoln, Neb.	23.6.06 28.3.14 26.3.21 2.7.27
*100		9 $\frac{4}{5}$	L. A. Clarke.	Baltimore, Md.	9.2.24
220		20 $\frac{3}{8}$	R. A. Locke.	Lincoln, Neb.	1.5.26
*220		22 $\frac{3}{8}$	L. Murchison.	New York.	6.1.25
300		30 $\frac{1}{8}$	C. W. Paddock.	Redlands, Cal.	23.4.21
*300		31 $\frac{1}{2}$	{ A. Woodring. L. Murchison.	Buffalo, N.Y. Buffalo, N.Y.	11.2.22 17.2.23
†440		47	M. W. Long.	Guttenberg, N.J.	4.10.00
440		47 $\frac{3}{8}$	J. E. Meredith.	Cambridge, Mass.	27.5.16
*440		49 $\frac{3}{8}$	{ T. J. Halpin. W. F. Koppisch.	Buffalo, N.Y. Buffalo, N.Y.	15.3.13 17.3.23
600	I	10 $\frac{4}{5}$	{ M. W. Sheppard. T. Campbell.	New York. Chicago.	14.8.10 31.8.22
*600	I	11 $\frac{3}{8}$	A. B. Helffrich.	New York.	17.3.25
880	I	52 $\frac{1}{8}$	J. E. Meredith.	Philadelphia.	13.5.16
*880	I	51 $\frac{4}{5}$	L. Hahn.	New York.	3.3.28
1000	2	12 $\frac{1}{8}$	L. Brown.	Philadelphia.	11.6.21
*1000	2	12 $\frac{1}{8}$	L. Hahn.	New York.	28.2.27
1320	3	2 $\frac{4}{5}$	T. P. Conneff.	New York.	21.8.95
*1320	3	3 $\frac{3}{8}$	L. Hahn.	New York.	9.3.25
Miles.					
I	4	12 $\frac{1}{2}$	N. S. Tabor.	Cambridge, Mass.	16.7.15
*I	4	12	{ P. Nurmi. J. Ray.	Buffalo, N.Y. New York.	7.3.25 17.3.25
2	9	17 $\frac{4}{5}$	T. S. Berna.	Ithaca, N.Y.	4.5.12
*2	8	58 $\frac{1}{8}$	P. Nurmi.	New York.	14.2.25
3	14	22 $\frac{3}{8}$	H. Kolehmainen.	New York.	17.8.13
*3	13	56 $\frac{1}{8}$	W. Ritola.	New York.	24.2.25
4	20	2	H. Kolehmainen.	New York.	1.11.13
*4	19	27 $\frac{1}{8}$	W. Ritola.	New York.	20.1.23
10	51	3 $\frac{3}{8}$	H. Kolehmainen.	New York.	1.11.13
*10	51	6 $\frac{3}{8}$	H. Kolehmainen.	Buffalo, N.Y.	1.2.13
	m.	yds.			
1 hour.	11	153	A. Stenroos.	New York.	26.5.25
Miles.	h. m.	s.			
15	1	23 24 $\frac{1}{8}$	C. Pores.	New York.	1.6.19
20	1	58 27 $\frac{3}{8}$	J. Clark.	New York.	14.11.09
*25	2	44 50	M. Maloney.	New York.	8.1.09

* Indicates that the record was made indoors.

† Straight track.

ATHLETICS

HURDLES

Event.	Time.	Holder.	Where Made.	Date.
Yds.	Secs.			
*70				
(Six 3'6" hurdles)	9½	{ E. F. Smalley. W. Smith.	Buffalo, N.Y. New York.	21.2.20 13.2.30
*70	8½	C. H. Moore.	New York.	7.3.25
(Five 3'6" hurdles)				
120	14¾	E. J. Thomson.	Philadelphia.	29.5.20
†220	23	C. R. Brookins.	Ames, Iowa.	17.5.24
(2' 6" hurdles)	23½	C. R. Brookins.	Chicago.	7.6.24
440				
(3' hurdles)	52¾	J. A. Gibson.	Lincoln, Neb.	2.7.27

* Indoors.

† Straight track.

FIELD EVENTS

Event.	Distance.	Holder.	Where Made.	Date.
	ft. ins.			
High Jump	6 8½	H. M. Osborne.	Urbana, Ill.	27.5.24
*High Jump	6 6½	H. M. Osborne.	New York.	27.1.25
Long Jump	25 11½	E. B. Hamm.	Boston.	7.7.28
*Long Jump	24 7½	D. H. Hubbard.	New York.	20.3.26
Hop, Step and Jump....	50 11	D. F. Ahearn.	Long Island.	30.5.11
Pole Vault ...	14 1¾	L. Barnes.	California.	28.4.28
*Pole Vault	13 9½	S. W. Carr.	New York.	14.2.27
Putting the Weight	51 0	R. Rose.	San Francisco.	21.8.09
*Putting the Weight	50 7½	H. Schwarze.	....	6.3.26
Throwing the Hammer	189 6½	P. J. Ryan.	Long Island.	17.8.13
Throwing the Discus	158 1¾	C. Houser.	Palo Alto, Cal.	3.4.26
Throwing the Javelin	212 5	J. Myrrha.	Los Angeles.	25.4.25

* Indoors.

RECORDS AND STATISTICS

FINLAND

Event.	Time or Distance.		Holder.	Year.
†Metres.	M.	S.		
100		10 $\frac{3}{4}$	{ U. Railo. L. Härö.	1907 1922
200		22 $\frac{1}{2}$	Astrom.	1927
400		49 $\frac{3}{4}$	E. Vilen.	1921
800	1	57	E. Vilen.	1921
1,500	3	52 $\frac{3}{4}$	Lagerstrom.	1928
5,000	14	35 $\frac{3}{4}$	P. Nurmi.	1922
10,000	30	40 $\frac{1}{2}$	P. Nurmi.	1921
Hurdles				
110		14 $\frac{0}{10}$	Sjorstedt.	1928
400		54 $\frac{3}{4}$	E. Vilen.	1928
	metres.	ft. ins.		
High Jump	1.90	6 3	Wahlstedt.	1927
Long Jump	7.29	23 11 $\frac{1}{2}$	V. Tuulos.	1928
Pole Jump	3.70	12 1 $\frac{1}{2}$	A. Ranhamaa.	1921
Hop, Step and Jump	15.58	51 1 $\frac{1}{2}$	V. Tuulos.	1928
Putting the Weight	15.50	50 10	Wahlstedt.	1928
Throwing the Hammer	47.57	156 0 $\frac{1}{2}$	E. Nicklander.	1916
Throwing the Discus ...	44.05	144 6 $\frac{1}{2}$	A. R. Taipale.	1914
Throwing the Javelin	69.88	229 3 $\frac{1}{2}$	E. Penttila.	1927

† To compare metres with yards, see Table IV, page 360.

FRANCE

Event.	Time or Distance.		Holder.	Where Made.	Date.
Metres.	M.	S.			
100		10 $\frac{3}{4}$	A. Mourlon.	Colombes.	17.7.27
200		21 $\frac{3}{4}$	A. Mourlon.	Colombes.	22.6.24
400		48 $\frac{1}{4}$	R. Féger.	Colombes.	15.7.28
800	1	50 $\frac{3}{4}$	S. Martin.	Colombes.	14.7.28
1,000	2	26	S. Martin.	Colombes.	18.9.27
1,500	3	52 $\frac{1}{2}$	J. Ladoumègue.	Colombes.	15.7.28
5,000	14	36 $\frac{1}{4}$	J. Bouin.	Stockholm.	10.7.12
10,000	30	58 $\frac{1}{4}$	J. Bouin.	Colombes.	16.11.11
Hurdles					
110		15	G. Sempé.	Colombes.	9.8.25
400		54	R. Viel.	Colombes.	14.7.28
	metres.	ft. ins.			
High Jump	1.95	6 4 $\frac{1}{2}$	P. Lewden.	Stockholm.	30.8.25
Long Jump	7.125	23 4 $\frac{1}{2}$	L. Wilhelme.	Colombes.	21.6.24
Pole Jump	3.90	12 9 $\frac{1}{2}$	R. Vintousky.	Osaka.	13.10.28
Hop, Step and Jump	13.57	44 6 $\frac{1}{2}$	R. Rousset.	Pershing.	15.7.23
Weight	15.09	49 6 $\frac{1}{2}$	E. Duhour.	Berlin.	2.9.28
Hammer	42.29	138 9 $\frac{3}{4}$	P. Zaidin.	Paris.	4.7.26
Discus	45.18	148 2 $\frac{3}{4}$	J. Noël.	Strasbourg.	26.8.28
Javelin	61.34	201 2 $\frac{3}{4}$	E. Degland.	Colombes.	10.6.28

ATHLETICS

GERMANY

Event.	Time or Distance.		Holder.	Where Made.	Date.
Metres.	M.	S.			
100		10 $\frac{3}{8}$	H. Körnig.	Leipzig.	8.8.26
200		20 $\frac{1}{10}$	H. Körnig.	Berlin.	19.8.28
400		47 $\frac{1}{8}$	J. Büchner.	Berlin.	2.9.28
800	1	51 $\frac{3}{8}$	O. Peltzer.	London.	3.7.26
1,000	2	25 $\frac{1}{8}$	O. Peltzer.	Paris.	18.9.27
1,500	3	51	O. Peltzer.	Berlin.	11.9.26
5,000	15	3	O. Kohn.	Paris.	21.8.27
10,000	32	0 $\frac{1}{8}$	O. Petri.	Berlin.	17.7.27
Hurdles					
110		14 $\frac{1}{10}$	H. Trossbach.	Berlin.	8.8.25
400		54 $\frac{1}{8}$	O. Peltzer.	Berlin.	17.7.27
	metres.	ft. ins.			
High Jump	1.923	6 3 $\frac{1}{8}$	R. Pasemann.	Braunschweig.	13.8.11
Long Jump	7.645	25 1 $\frac{1}{2}$	R. Dobermann.	Jena.	10.6.28
Pole Jump	3.82	12 6 $\frac{1}{4}$	J. Müller.	Dusseldorf.	15.7.28
Hop, Step and Jump	14.99	49 2 $\frac{1}{2}$	A. Holz.	Berlin.	1.7.22
Weight	16.045	52 7 $\frac{3}{8}$	E. Hirschfeld.	Bochum.	26.8.28
Hammer	46.05	151 1	J. Mang.	Nurnberg.	17.6.28
Discus	48.775	160 0 $\frac{3}{8}$	H. Hoffmeister.	Gelsenkirchen.	22.7.28
Javelin	64.60	211 11 $\frac{3}{8}$	B. Schlokat.	Oslo.	18.9.27

SWEDEN

Event.	Time or Distance.		Holder.	Where Made.	Date.
Metres.	M.	S.			
100		10 $\frac{3}{8}$	K. Lindberg.	Göteborg.	26.8.06
200		21 $\frac{1}{10}$	N. Engdahl.	Stockholm.	11.7.20
400		48 $\frac{1}{8}$	N. Engdahl.	Stockholm.	17.8.24
800	1	52 $\frac{1}{8}$	E. Byléhn.	Amsterdam.	31.7.28
1,000	2	28 $\frac{1}{8}$	S. Lundgren.	Stockholm.	27.9.22
1,500	3	51 $\frac{1}{8}$	E. Wide.	Berlin.	11.9.26
5,000	14	40 $\frac{1}{8}$	E. Wide.	Stockholm.	18.6.25
10,000	30	55 $\frac{1}{8}$	E. Wide.	Paris.	6.7.24
Hurdles					
110		14 $\frac{1}{10}$	S. Petterssen.	Stockholm.	18.9.27
400		52 $\frac{1}{8}$	S. Petterssen.	Köln.	7.8.28
	metres.	ft. ins.			
High Jump	1.95	6 4 $\frac{1}{8}$	K. Osterberg.	Stockholm.	19.6.25
Long Jump	7.50	24 8	O. Hallberg.	Görlle.	23.9.28
Pole Jump	4.00	13 1 $\frac{1}{2}$	H. Lindblad	Stockholm.	26.8.28
Hop, Step and Jump	15.09	49 6 $\frac{1}{2}$	F. Jansson.	Paris.	28.8.20
Weight	15.08	49 5 $\frac{1}{8}$	B. Jansson.	Stockholm.	10.9.27
Hammer	53.85	176 7 $\frac{1}{8}$	O. Sköld.	Stockholm.	10.9.27
Discus	45.77	150 2	O. Zallhagen.	Euköping.	24.9.16
Javelin	71.01	232 11 $\frac{1}{10}$	E. H. Lundkvist	Stockholm.	15.8.28

RECORDS AND STATISTICS

BRITISH AND DOMINION RECORDS

ENGLISH NATIVE RECORDS

Event.	Time or Distance.	Holder.	Where Made.	Date.
Yds.	M. S.			
100	9 $\frac{1}{8}$	{ W.R.Applegarth. H. H. Hodge.	Stamford Bridge. Cambridge.	20.6.14 11.6.27
120	11 $\frac{1}{8}$	{ W. Page Phillips. J. W. Morton.	Stamford Bridge. Stamford Bridge.	25.3.82 24.9.04
150	14 $\frac{3}{8}$	W. R. Applegarth	Cardiff.	28.6.13
200	19 $\frac{3}{8}$	W. R. Applegarth.	Kennington Oval.	14.9.12
220	21 $\frac{1}{8}$	W. R. Applegarth.	Stamford Bridge.	4.7.14
250	24 $\frac{3}{8}$	E. H. Pelling.	Stamford Bridge.	22.9.88
300	30 $\frac{3}{8}$	G. M. Butler.	Stamford Bridge.	26.6.26
440	48 $\frac{1}{2}$	{ H. C. L. Tindall E. C. Bredin.	Stamford Bridge. Stamford Bridge.	29.6.89 22.6.95
500	57 $\frac{3}{8}$	C. N. Seedhouse.	Stamford Bridge.	29.9.13
600	1 10 $\frac{3}{8}$	D. G. A. Lowe.	Stamford Bridge.	26.6.26
880	1 53 $\frac{3}{8}$	D. G. A. Lowe.	Fallowfield.	16.7.27
1000	2 14 $\frac{3}{8}$	W. E. Lutyens.	Stamford Bridge.	3.6.98
1320	3 5 $\frac{3}{8}$	A. G. Hill.	Salford.	4.6.21
Miles.				
1	4 13 $\frac{3}{8}$	A. G. Hill.	Stamford Bridge.	2.7.21
2	9 17	A. Shrubbs.	Kennington Oval.	12.9.03
3	14 17 $\frac{3}{8}$	A. Shrubbs.	Stamford Bridge.	21.5.03
4	19 31 $\frac{3}{8}$	A. Shrubbs.	Preston Park.	25.10.02
5	24 33 $\frac{3}{8}$	A. Shrubbs.	Stamford Bridge.	12.5.04
6	30 17 $\frac{3}{8}$	S. Thomas.	Herne Hill.	22.10.92
7	35 36 $\frac{3}{8}$	S. Thomas.	Herne Hill.	22.10.92
8	40 57 $\frac{3}{8}$	W. G. George.	Stamford Bridge.	28.7.84
9	46 12	W. G. George.	Stamford Bridge.	7.4.84
10	51 20	W. G. George.	Stamford Bridge.	7.4.84
Yds.				
120 (hrdls.)	14 $\frac{1}{8}$	{ Lord Burghley. F. R. Gaby.	Cambridge.	11.6.27 .28
220 "	24 1 $\frac{7}{8}$	Lord Burghley.	Stamford Bridge.	9.7.27
440 "	54	Lord Burghley.	Stamford Bridge.	7.7.28
	ft. ins.			
High Jump	6 5	B. H. Baker	Huddersfield	25.6.21
Long Jump	24 2 $\frac{1}{2}$	H. M. Abrahams.	Woolwich.	7.6.24
Pole Jump	11 10 $\frac{1}{2}$	L. T. Bond.	Oxford.	23.6.28
Hop, Step and Jump	46 9	J. Higginson	Wathon-Dearn.	19.6.26
Hammer	172 0 $\frac{1}{2}$	M. C. Nokes.	Gloucester.	16.6.23
Weight	44 11	R. S. Woods.	Stamford Bridge.	3.7.26
Javelin	175 3 $\frac{1}{2}$	J. Dalrymple.	Stamford Bridge.	11.8.28
Discus	126 1	M. C. Nokes.	Stamford Bridge.	30.7.27

ATHLETICS

SCOTTISH RECORDS

Event.	Time or Distance.	Holder.	Date.
Yds.	M. S.		
100	9 $\frac{1}{2}$	W. R. Applegarth.	1913
220	21 $\frac{1}{2}$	W. R. Applegarth.	1914
440	48 $\frac{1}{2}$	W. Halswelle.	1908
880	1 55 $\frac{1}{2}$	D. L. Mason.	1919
Miles.			
1	4 16 $\frac{1}{2}$	A. G. Hill.	1919
4	19 23 $\frac{1}{2}$	A. Shrubbs.	1904
10	50 40 $\frac{1}{2}$	A. Shrubbs.	1904
120 Yds.			
Hurdles.	14 $\frac{1}{2}$	G. C. Weightman-Smith.	1927
	ft. ins.		
High Jump	6 6 $\frac{1}{2}$	H. M. Osborne.	1925
Long Jump	23 9 $\frac{1}{2}$	P. O'Connor.	1901
Pole Jump	12 4 $\frac{1}{2}$	V. H. Pickard.	1924
Weight	47 1	D. Horgan.	1899
Hammer	168 7 $\frac{1}{2}$	J. J. Flanagan	1911

IRISH RECORDS

Event.	Time or Distance.	Holder.
Yds.	M. S.	
100	9 $\frac{1}{2}$	D. J. Cussen.
220	22 $\frac{1}{2}$	{ N. J. Cartmell.
440	49 $\frac{1}{2}$	{ R. Kerr.
880	1 56 $\frac{1}{2}$	D. G. A. Lowe.
Miles.		G. N. Coughlan.
1	4 21	C. Ellis.
4	19 44 $\frac{1}{2}$	T. P. Conneff.
10	56 9 $\frac{1}{2}$	F. J. O'Neill.
120 Yds.		
Hurdles	15	S. J. M. Atkinson.
	ft. ins.	
High Jump	6 5	T. J. Carroll.
Long Jump	24 11 $\frac{1}{2}$	P. O'Connor.
Pole Jump	13 0	C. McGinnis.
Hop, Step and Jump	50 1 $\frac{1}{2}$	D. Shanahan.
Weight	49 3 $\frac{1}{2}$	R. Rose.
Hammer	170 7 $\frac{1}{2}$	P. O'Callaghan

RECORDS AND STATISTICS

AUSTRALASIAN RECORDS

Event.	Time or Distance.	Holder.	Where Made.	Date.
Yds.	M. S.			
100	9 $\frac{1}{8}$	{ W. T. Macpherson. J. H. Hempton.	Auckland Christchurch.	1891 1892
220	21 $\frac{1}{2}$	(M. Leadbetter. E. W. Carr.	Auckland. ...	1927 1922
440	48 $\frac{1}{2}$	N. C. Barker.	...	1908
880	1 55 $\frac{1}{8}$	W. Hunt.	...	1928
Miles.				
1	4 13 $\frac{3}{8}$	R. A. Rose.	Masterton.	1926
10	53 31 $\frac{3}{8}$	A. Gainsford.	....	1928
120 (hrdls.)	15 $\frac{1}{8}$	{ H. E. Wilson. R. W. Lauder.	Wanganui. Auckland.	1922 1927
440 (hrdls.)	54 1 $\frac{9}{10}$	A. J. Watson.	....	1927
	ft. ins.			
High Jump	6 3 $\frac{1}{2}$	E. M. Davidson.	....	1928
Long Jump	23 9	R. J. Honner.	....	1921
Pole Jump	11 7 $\frac{1}{2}$	M. Kroger.	....	1928
Hop, Step and Jump	49 8 $\frac{1}{2}$	A. W. Winter.	....	....
Weight	46 0 $\frac{7}{8}$	P. Munro.	Christchurch	1921
Hammer	1 69 9 $\frac{3}{4}$	J. W. Marchant.	...	1923
Discus	137	P. Munro.	Wellington.	1924
Javelin	209 7	S. A. Lay.	...	1928

CANADIAN RECORDS

Event.	Time or Distance.	Holder.	Date.
Yds.	M. S.		
100	9 $\frac{3}{8}$	{ C. H. Coaffee. L. Miller.	1922 1928
220	21 $\frac{3}{8}$	R. Kerr.	1908
440	48 $\frac{3}{8}$	W. C. Robbins.	1909
880	1 52 $\frac{3}{8}$	E. Lunghi.	1909
Miles.			
1	4 15	J. W. Ray.	1921
10	....	....	....
120 (hrdls.)	15 $\frac{1}{8}$	E. Spence.	1927
440 (hrdls.)	56 $\frac{3}{8}$	W. J. Montabone.	1927
	ft. ins.		
High Jump	6 3 $\frac{3}{8}$	A. Munro.	1928
Long Jump	23 8 $\frac{1}{8}$	C. D. Bricker.	1908
Pole Jump	12 8	V. Pickard	1926
Weight	49 7 $\frac{1}{4}$	R. Rose.	1907
Hammer	182 4	M. J. McGrath.	1911
Discus	143 8 $\frac{1}{4}$	G. Pope.	1922
Javelin	202 4 $\frac{1}{4}$	D. W. Pilling.	1928

ATHLETICS

SOUTH AFRICAN RECORDS

Event.	Time or Distance.	Holder.	Date.
Yds.	M. S.		
100	9 $\frac{1}{8}$	{ R. E. Walker. G. H. Patching. F. M. Solomon. G. G. Dustan. L. B. B. Betts. W. B. Legg.	1909 1912 1915 1923 1923 1927
220	21 $\frac{3}{8}$	W. B. Legg.	1928
440	48 $\frac{3}{8}$	L. B. B. Betts.	1923
880	1 56 $\frac{1}{8}$	{ W. F. Flynn. C. W. Oldfield.	1914 1923
Miles.			
1	4 24 $\frac{1}{8}$	E. B. Palm.	1925
10	52 46 $\frac{1}{8}$	K. K. MacArthur.	1911
120 (hrdls.)	15	S. J. M. Atkinson.	1923
440 (hrdls.)	56 $\frac{3}{8}$	A. B. Burton-Durham.	1926
	ft. ins.		
High Jump	6 1 $\frac{3}{8}$	G. Scott.	1924
Long Jump	24 1 $\frac{1}{8}$	S. J. M. Atkinson.	1925
Pole Jump	10 10 $\frac{1}{8}$	D. C. Morkel.	1922
Weight	43 4	{ H. D. Gradwell. H. B. Hart.	1894 1928
Hammer	131 8 $\frac{5}{8}$	N. Mackenzie.	1921
Discus	119 2	E. G. Sutherland.	1925
Javelin	191	G. C. Weightman-Smith.	1928

UNIVERSITY RECORDS

OXFORD v. CAMBRIDGE

Event.	Time or Distance.	Holder and University	Date.
Yds.	M. S.		
100	9 $\frac{9}{10}$	A. E. Porritt (Magdalen, Oxford).	1925
440	49 $\frac{3}{8}$	D. Macmillan (Trinity, Cambridge).	1912
880	1 54 $\frac{1}{8}$	K. Cornwallis (Trinity, Oxford)	1904
Miles.			
1	4 17 $\frac{1}{8}$	C. C. Henderson-Hamilton (Trinity, Oxford).	1905
3	14 34 $\frac{1}{8}$	G. M. Sproule (Balliol, Oxford).	1914
120 (hrdls.)	15 $\frac{3}{8}$	G. C. Weightman-Smith (Selwyn, Cambridge).	1928
120 (hrdls.)	15 $\frac{3}{8}$ *	K. H. Powell (King's, Cambridge).	1907
220 (hrdls.)	24 $\frac{1}{8}$	{ Lord Burghley (Magdalene, Cambridge). G. C. Weightman-Smith (Selwyn, Cambridge).	1925 1928
	ft. ins.		
Long Jump	23 7 $\frac{1}{2}$	H. M. Abrahams (Caius, Cambridge).	1923
High Jump	6 2 $\frac{1}{8}$	M. J. Brooks (B.N.C., Oxford).	1876
Pole Jump	12 0	G. P. Faust (St. Catherine's, Oxford).	1928
Weight	43 10	W. W. Coe (Hertford, Oxford).	1902
Hammer	153 3†	G. E. Putnam (Christchurch, Oxford).	1911

* On grass.

† This event was last held in 1921.

RECORDS AND STATISTICS

AMERICAN INTER-COLLEGIATE RECORDS

(I.C.A.A.A.A.)

Event.	Time or Distance.	Holder and University.	Where Made.	Date.
Yds.	M. S.			
100	9 ⁷ / ₁₀	{ J. A. Leconey (Lafayette).	Cambridge, Mass.	1922
		{ H. A. Russell (Cornell).	Cambridge, Mass.	1926
220	20 ⁹ / ₁₀	C. E. Borah (So. California).	Philadelphia.	1927
440	47 ² / ₅	J. E. Meredith (Pennsylvania).	Cambridge, Mass.	1916
880	1 53	J. E. Meredith (Pennsylvania).	Cambridge, Mass.	1916
Miles.				
1	4 14 ² / ₅	J. P. Jones (Cornell).	Cambridge, Mass.	1913
2	9 22 ² / ₅	J. C. Dresser (Cornell).	Cambridge, Mass.	1919
120 (hrdls.)	14 ² / ₅	E. J. Thomson (Dartmouth).	Philadelphia.	1920
		{ A. C. Kraenzlein (Pennsylvania).	New York.	1898
220 (hrdls.)	23 ² / ₅	{ J. I. Wendell (Wesleyan).	Cambridge, Mass.	1913
		{ K. D. Grumbles.	Cambridge, Mass.	1926
	ft. ins.			
High Jump	6 5 ¹ / ₂	R. W. King (Stanford).	Cambridge, Mass.	1926
Long Jump	24 10 ³ / ₈	A. H. Bates (Penn. State).	Cambridge, Mass.	1928
Pole Jump	14 0	S. W. Carr (Yale).	Philadelphia.	1927
Weight	50 1	E. W. Kreuz (Stanford)	Cambridge, Mass.	1928
Hammer	181 6 ¹ / ₂	F. D. Tootell (Bowdoin).	Philadelphia.	1923
Discus	154 11	E. W. Kreuz (Stanford)	Cambridge, Mass.	1928
Javelin	205 7 ¹ / ₈	C. B. Hines (Georgetown).	Philadelphia.	1927

OXFORD-CAMBRIDGE v. YALE-HARVARD.

Event.	Time or Distance.	Holder and University.	Year.
Yds.	M. S.		
100	9 ¹ / ₅	{ W. A. Schick (Harvard).	1904
		{ *A. H. Miller (Harvard).	1925
220	21 ³ / ₅	{ H. M. Abrahams (Cambridge).	1923
		{ *A. E. Porritt (Oxford).	1925
440	49	*B. G. D. Rudd (Oxford).	1921
880	1 53 ² / ₅	*D. G. A. Lowe (Cambridge).	1925
Miles.			
1	4 20 ² / ₅	*H. B. Stallard (Cambridge).	1921
2	9 29 ¹ / ₅	E. G. Taylor (Oxford).	1911
Hurdles			
120	15 ¹ / ₅	G. C. Weightman-Smith (Cambridge).	1927
220	24 ⁷ / ₁₀	Lord Burghley (Cambridge).	1927
	ft. ins.		
High Jump	6 3	*R. W. Landon (Yale).	1921
Long Jump	25 3	*E. O. Gourdin (Harvard).	1921
Pole Jump	13 0	*S. W. Carr (Yale).	1925
Weight	44 5	C. A. Pratt (Harvard).	1927
†Hammer	159 3 ¹ / ₂	*J. F. Brown (Harvard).	1921

* Indicates made in America.

† Omitted since 1921.

ATHLETICS

INTER-VARSITY ATHLETIC BOARD

(I.V.A.B.)

Event.	Time or Distance.	Holder and University.	Year.
Yds.	M. S.		
100	10 $\frac{1}{8}$	J. E. London (London).	1928
220	22 $\frac{3}{8}$	J. W. Thwaite (Liverpool).	1923
440	51	J. V. S. Milne (Leeds).	1924
880	2 3 $\frac{1}{8}$	E. A. Johnstone (Manchester).	1925
Miles			
1	4 32	D. J. P. Richards (Aberystwyth).	1926
3	15 16 $\frac{1}{8}$	B. C. V. Oddie (London).	1926
Hurdles			
120	16 $\frac{3}{8}$	D. C. Prowse (Bristol).	1922
440	59 $\frac{3}{8}$	D. McC. Bone (Liverpool).	1924
	ft. ins.		
High Jump	5 10 $\frac{1}{2}$	J. E. London (London).	1926
Long Jump	22 4 $\frac{1}{2}$	C. A. Gee (Nottingham).	1923
Pole Jump	10 10	J. W. Jessen (London).	1927
Weight	41 0	K. H. Pridie (Bristol).	1927
Hammer	105 4	K. H. Pridie (Bristol).	1928
Discus	120 7 $\frac{1}{8}$	K. H. Pridie (Bristol).	1928
Javelin	163 3	W. P. Abell (Nottingham).	1926

PUBLIC SCHOOLS SPORTS RECORDS

Event.	Time or Distance.	Holder and School.	Year.
Yds.	M. S.		
100	10 $\frac{3}{8}$	{ C. F. N. Harrison (Eton). R. S. Rowlands (City of London).	{ 1923 1925 1926
440	*10 $\frac{1}{8}$ 52	G. B. Bookless (Lancing). D. Barrington Hudson (Imp. Service College, Windsor).	1928 1927
880	2 1 $\frac{3}{8}$	H. S. Townend (St. Edmund's, Canterbury).	1927
1 Mile.	4 32 $\frac{3}{8}$	{ B. T. Ward (Rossall). H. W. Gregson (Oundle).	1898 1900
Hurdles.			
120	16 $\frac{3}{8}$ *16 $\frac{1}{16}$	P. R. O'R. Phillips (Highgate). G. Dyas (Lancing).	1910 1928
	ft. ins.		
High Jump	5 10 $\frac{1}{8}$	H. A. Simmons (Taunton's, Southampton).	1928
Long Jump	22 3 $\frac{1}{8}$	J. Simpson (Oundle).	1928
Pole Jump	9 2 $\frac{1}{8}$	M. S. Tweedie (Charterhouse).	1927
$\frac{1}{4}$ Mile			
Steeple-chase	M. S. 4 3 $\frac{3}{8}$	V. E. Morgan (Charterhouse).	1923
Mile Walk	7 32 $\frac{1}{8}$	J. B. Carne (Polytechnic).	1923

* With strong wind.

RECORDS AND STATISTICS

WOMEN'S WORLD RECORDS

Event.	Time or Distance.	Holder and Nationality.	Where Made.	Year.
100 yards	M. S. 11	Miss Rosenfeld (Canada).	Toronto.	1925
100 meters	12 $\frac{1}{8}$	Miss Robinson (U.S.A.).	Amsterdam.	1928
800 meters	2 16 $\frac{3}{8}$	Frau Radke (Germany).	Amsterdam.	1928
400 Relay (4 × 100 m.)	48 $\frac{1}{8}$	Canadian Olympic Team.	Amsterdam.	1928
High Jump	ft. ins. 5 3	Miss Catherwood (Canada).	Amsterdam.	1928
Long Jump	19 7 $\frac{1}{2}$	Miss Hitomi (Japan).	London.	1928
Weight	39 2 $\frac{7}{8}$	Frl. Heublein (Germany).	Berlin	1928
Discus	130 1 $\frac{7}{8}$	Mlle. Konopacka (Poland).	Amsterdam.	1928
Javelin	125 11 $\frac{1}{2}$	Frl. Hargus (Germany).	Berlin	1928

TABLE I
SHOWING PROGRESS OF WORLD'S RECORDS SINCE 1880,
AND THE COUNTRY IN WHICH THE RECORD WAS MADE

100 YARDS.				220 YARDS.			
Prior to 1880	10	J. P. Tennent ('68). J. G. Wilson ('70). G. H. Urnston ('73). E. J. Davies ('74). W. C. Wilmer ('78).	England. England. England. England. U.S.A.	Prior to 1880	22½	W. C. Wilmer ('78).	U.S.A.
1880	10	L. E. Myers.	U.S.A.	1880	....	....	....
1881	1881	....	....	....
1882	1882	22½	H. S. Brooks.	U.S.A.
1883	1883	....	....	....
1884	J. M. Cowie.	Scotland.	1884	....	....	....
1885	1885	22	W. Baker.	U.S.A.
1886	A. Wharton.	England.	1886	21½	C. G. Wood.	England.
1887	1887	....	....	....
1888	F. Westing.	U.S.A.	1888	....	....	....
1889	1889	....	....	....
1890	9½	J. Owen.	U.S.A.	1890	....	....	....
1891	W. Macpherson.	N. Z.	1891	....	L. H. Cary.	England.
1892	J. H. Hempton.	N. Z.	1892	....	....	....
1893	C. W. Stage.	U.S.A.	1893	....	....	....
1894	1894	....	....	....
1895	J. V. Crum.	U.S.A.	1895	....	B. J. Wefers.	U.S.A.
....	C. A. Bradley.	England.	....	....	J. V. Crum.	U.S.A.
....	B. J. Wefers.	U.S.A.	1896	....	J. H. Maybury.	U.S.A.
1896	B. J. Wefers.	U.S.A.	....	21½	B. J. Wefers.	U.S.A.
1897	J. H. Maybury.	U.S.A.	1897	....	....	....
....	B. J. Wefers.	U.S.A.	1898	....	....	....
1898	J. H. Rush.	U.S.A.	1899	....	....	....
1899	1900	....	....	....
1900	1901	....	....	....
1901	A. F. Duffey.	U.S.A.	1902	....	....	....
....	E. M. Sears.	U.S.A.	1903	....	....	....
....	A. F. Duffey.	England.	1904	....	....	....
1902	9½	A. F. Duffey.	U.S.A.	1905	....	....	....
1903	1906	....	D. J. Kelly.	U.S.A.
1904	1907	....	....	....
1905	1908	....	....	....
1906	D. J. Kelly.	U.S.A.	1909	....	....	....
1907	1910	....	R. C. Craig.	U.S.A.
1908	1911	....	R. C. Craig.	U.S.A.
1909	1912	....	....	....
1910	1913	....	D. F. Lippincott.	U.S.A.
1911	1914	....	H. P. Drew.	U.S.A.
1912	W. R. Applegarth.	England.
1913	G. Parker.	U.S.A.
1914	H. P. Drew.	U.S.A.	1915	....	....	....
1915	1916	....	....	....
1916	1917	....	....	....
1917	1918	....	....	....
1918	1919	....	....	....
1919	1920	....	....	....
1920	1921	20½	C. W. Paddock	U.S.A.
1921	C. W. Paddock (5 times).	U.S.A.	....	(twice).	....	....
1922	C. Coaffee.	Canada.	1922	....	....	....
1923	U.S.A.	1923	....	H. A. Russell.	U.S.A.
1924	C. W. Paddock.	....	1924	....	C. W. Paddock.	U.S.A.
1925	1925	....	....	....
1926	1926	20½	R. A. Locke.	U.S.A.
1927	C. Bowman.	U.S.A.	1927	....	....	....
1928	1928	....	....	....

RECORDS AND STATISTICS

TABLE I.—continued.

440 YARDS.				880 YARDS.			
Prior to 1880	51 50½	E. Ridley ('68). E. J. Colbeck ('68), J. Shearman ('77).	England. England. England.	Prior to 1880	2 0 .. 1 59 1 57½	A. C. Pelham ('72). W. Slade ('76), W. Slade ('76). F. T. Elborough ('76).	England. Ireland. Ireland. England.
1880	....	....	....	1880	....	....	....
1881	49½	L. E. Myers.	U.S.A.	1881	1 56	L. E. Myers.	England.
....	48½	L. E. Myers.	England.	1882	....	....	....
1882	....	....	....	1883	....	....	....
1883	....	....	....	1884	1 55½	L. E. Myers.	England.
1884	....	....	....	1885	....	L. E. Myers (twice).	U.S.A.
1885	....	....	....	1886	....	....	....
1886	*47½	W. Baker.	U.S.A.	1887	....	....	....
1887	....	....	....	1888	1 54½	F. J. K. Cross.	England.
1888	....	....	....	1889	....	....	....
1889	48½	H. C. L. Tindall.	England.	1890	..	....	....
1890	*47½	W. C. Downs.	U.S.A.	1891	..	....	....
1891	....	....	....	1892	..	....	....
1892	....	....	....	1893	....	....	....
1893	....	....	....	1894	..	....	....
1894	....	....	....	1895	1 53½	C. H. Kilpatrick.	U.S.A.
1895	48½	E. C. Bredin.	England.	1896	..	....	....
1896	....	....	....	1897	..	....	....
1897	....	....	....	1898	..	....	....
1898	....	....	....	1899	....	....	....
1899	....	....	....	1900	..	....	....
1900	47½	M. W. Long	U.S.A.	1901	..	....	....
....	*47	M. W. Long.	U.S.A.	1902	....	....	....
1901	....	....	....	1903	..	....	....
1902	....	....	....	1904	..	....	....
1903	....	....	....	1905	..	....	....
1904	....	....	....	1906	....	....	....
1905	....	....	....	1907	....	....	....
1906	....	....	....	1908	†1 52½	M. W. Sheppard.	England.
1907	....	....	....	1909	1 52½	E. Lunghi.	Canada.
1908	....	....	....	1910	....	....	....
1909	....	....	....	1911	....	....	....
1910	....	....	....	1912	1 52½	J. E. Meredith.	Sweden.
1911	....	....	....	....	†1 51½	J. E. Meredith.	Sweden.
1912	....	....	....	1913	....	....	....
1913	....	....	....	1914	....	....	....
1914	....	....	....	1915	....	....	....
1915	....	....	....	1916	1 52½	J. E. Meredith.	U.S.A.
1916	47½	J. E. Meredith.	U.S.A.	1917	....	....	....
1917	....	....	....	1918	....	....	....
1918	....	....	....	1919	....	....	....
1919	....	....	....	1920	....	....	....
1920	....	....	....	1921	....	....	....
1921	....	....	....	1922	....	....	....
1922	....	....	....	1923	....	....	....
1923	....	....	....	1924	....	....	....
1924	....	....	....	1925	....	....	....
1925	....	....	....	1926	1 51½	O. Peltzer.	England.
1926	....	....	....	1927	....	....	....
1927	....	....	....	1928	†1 51½	L. Hahn.	U.S.A.
1928	....	....	....	....	†1 50½	S. Martin.	France.

* Straight track. † Made indoors. ‡ Times for 800 metres, i.e. 5 yards short of 880 yards.

ATHLETICS

TABLE I.—*continued.*

ONE MILE.				TWO MILES.			
Prior to 1880	4 29 4 26 4 24½	W. M. Chinnery ('68). W. Slade ('74). W. Slade ('75).	England. England. England.	Prior to 1880	............	............	............
1880	4 23½	W. G. George.	England.	1880	....	....	....
1881	....	....	....	1881	....	....	....
1882	4 19½	W. G. George.	England.	1882	....	....	....
1885	....	....	....	1883	....	....	....
1884	4 18½	W. G. George.	England.	1884	....	....	....
1885	....	....	....	1885	9 17½	W. G. George.	England.
1886	....	....	....	1886	....	....	....
1887	....	....	....	1887	....	....	....
1888	....	....	....	1888	....	....	....
1889	....	....	....	1889	....	....	....
1890	....	....	....	1890	....	....	....
1891	....	....	....	1891	....	....	....
1892	....	....	....	1892	....	....	....
1893	....	....	....	1893	....	....	....
1894	4 18½	F. E. Bacon.	Scotland.	1894	....	....	....
1895	4 17	F. E. Bacon.	England.	1895	....	....	....
....	4 15½	T. P. Conneff.	U.S.A.	....	....	....	....
1896	....	....	....	1896	....	....	....
1897	....	....	....	1897	....	....	....
1898	....	....	....	1898	....	....	....
1899	....	....	....	1899	....	....	....
1900	....	....	....	1900	....	....	....
1901	....	....	....	1901	....	....	....
1902	....	....	....	1902	....	....	....
1903	....	....	....	1903	9 17	A. Shrubb.	England.
1904	....	....	....	1904	9 9½	A. Shrubb.	England.
1905	....	....	....	1905	....	....	....
1906	....	....	....	1906	....	....	....
1907	....	....	....	1907	....	....	....
1908	....	....	....	1908	....	....	....
1909	....	....	....	1909	....	....	....
1910	....	....	....	1910	....	....	....
1911	4 15½	J. P. Jones.	U.S.A.	1911	....	....	....
1912	....	....	....	1912	....	....	....
1913	4 14½	J. P. Jones.	U.S.A.	1913	....	....	....
1914	....	....	....	1914	....	....	....
1915	4 12½	N. S. Tabor.	U.S.A.	1915	....	....	....
1916	....	....	....	1916	....	....	....
1917	....	....	....	1917	....	....	....
1918	....	....	....	1918	....	....	....
1919	....	....	....	1919	....	....	....
1920	....	....	....	1920	....	....	....
1921	....	....	....	1921	....	....	....
1922	....	....	....	1922	....	....	....
1923	4 10½	P. Nurmi.	Sweden.	1923	....	....	....
1924	....	....	....	1924	....	....	....
1925	....	....	....	1925	....	....	....
1926	....	....	....	1926	9 1½	E. Wide.	Germany.
1927	....	....	....	1927	....	....	....
1928	....	....	....	1928	....	....	....

RECORDS AND STATISTICS

TABLE I.—*continued.*

FOUR MILES.				TEN MILES.			
Prior to 1880				Prior to 1880			
1880	....	....	....	1880	....	....	....
1881	....	....	....	1881	....	....	....
1882	....	....	....	1882	....	....	....
1883	....	....	....	1883	....	....	....
1884	....	....	....	1884	51 20	W. G. George.	England.
1885	....	....	....	1885	....	....	....
1886	....	....	....	1886	....	....	....
1887	....	....	....	1887	....	....	....
1888	....	....	....	1888	....	....	....
1889	....	....	....	1889	....	....	....
1890	....	....	....	1890	....	....	....
1891	....	....	....	1891	....	....	....
1892	....	....	....	1892	....	....	....
1893	....	....	....	1893	....	....	....
1894	....	....	....	1894	....	....	....
1895	....	....	....	1895	....	....	....
1896	....	....	....	1896	....	....	....
1897	....	....	....	1897	....	....	....
1898	....	....	....	1898	....	....	....
1899	....	....	....	1899	....	....	....
1900	....	....	....	1900	....	....	....
1901	....	....	....	1901	....	....	....
1902	....	....	....	1902	....	....	....
1903	....	....	....	1903	....	....	....
1904	19 23½	A. Shrubbs.	Scotland.	1904	50 40½	A. Shrubbs.	Scotland.
1905	....	....	....	1905	....	....	....
1906	....	....	....	1906	....	....	....
1907	....	....	....	1907	....	....	....
1908	....	....	....	1908	....	....	....
1909	....	....	....	1909	....	....	....
1910	....	....	....	1910	....	....	....
1911	....	....	....	1911	....	....	....
1912	....	....	....	1912	....	....	....
1913	....	....	....	1913	....	....	....
1914	....	....	....	1914	....	....	....
1915	....	....	....	1915	....	....	....
1916	....	....	....	1916	....	....	....
1917	....	....	....	1917	....	....	....
1918	....	....	....	1918	....	....	....
1919	....	....	....	1919	....	....	....
1920	....	....	....	1920	....	....	....
1921	....	....	....	1921	....	....	....
1922	....	....	....	1922	....	....	....
1923	....	....	....	1923	....	....	....
1924	19 15½	P. Nurmi.	Finland.	1924	....	....	....
1925	....	....	....	1925	....	....	....
1926	....	....	....	1926	....	....	....
1927	....	....	....	1927	....	....	....
1928	....	....	....	1928	50 15	P. Nurmi.	Germany.

ATHLETICS

TABLE I.—*continued.*

120 YARDS HURDLES.				220 YARDS HURDLES.			
Prior to 1880	16½	S. Palmer ('78).	England.	Prior to 1880			
1880	....	....	....	1880	....	..	....
1881	16½	G. P. Lawrence.	England.	1881	..	....	....
1882	....	....	....	1882	....	....	....
1883	....	S. Palmer.	England.	1883	....	.	....
1884	....	....	....	1884	....	....	....
1885	....	....	....	1885	..	....	....
1886	16	C. F. Daft.	England.	1886	....	....	....
1887	....	....	....	1887	27	A. F. Copland.	U.S.A.
1888	....	S. Joyce.	England.	1888	26½	A. F. Copland.	U.S.A.
1889	....	....	....	1889	....	....	....
1890	....	....	....	1890	....	....	....
1891	15½	H. L. Williams.	U.S.A.	1891	..	....	....
1892	15½	W. H. Henry.	U.S.A.	1892	....	.	....
1893	....	....	....	1893	..	....	....
1894	15½	S. Chase.	U.S.A.	1894	....	....	U.S.A.
1895	....	....	....	1895	24½	J. L. Bremer.	U.S.A.
1896	....	G. B. Shaw.	England.	1896	....	....	....
1897	....	....	....	1897	..	....	....
1898	15½	A. C. Kraenzlein.	U.S.A.	1898	23½	A. C. Kraenzlein.	U.S.A.
1899	....	....	....	1899	..	..	....
1900	....	....	....	1900	..	..	....
1901	....	..	....	1901	..	..	....
1902	....	....	....	1902	....	....	....
1903	....	....	....	1903	....	....	....
1904	....	....	....	1904	....	....	....
1905	....	....	..	1905	....	..	....
1906	....	....	....	1906	....	..	....
1907	....	....	....	1907	....	....	....
1908	....	A. B. Shaw.	U.S.A.	1908	..	.	....
....	*15	F. C. Smithson.	Sweden.	1909	..	..	....
1909	15½	F. C. Smithson.	U.S.A.	1910	..	.	....
1910	....	....	....	1911	..	..	....
1911	....	....	....	1912	..	....	....
1912	....	J. P. Nicholson.	....	1913	..	J. I. Wendell.	U.S.A.
1913	15	F. W. Kelly.	U.S.A.	1914	..	..	....
1914	....	F. W. Kelly.	U.S.A.	1915	....	..	....
1915	....	....	....	1916	....	R. Simpson.	U.S.A.
1916	14½	R. Simpson.	U.S.A.	1917	....	..	....
1917	....	....	....	1918	....	....	....
1918	....	....	....	1919	....	....	....
1919	....	....	....	1920	..	....	....
1920	14½	E. Thomson.	U.S.A.	1921	....	....	....
1921	....	....	....	1922	....	....	....
1922	....	....	....	1923	....	..	....
1923	....	....	....	1924	23	C. R. Brookins.	U.S.A.
1924	....	....	....	1925	....	....	....
1925	....	....	....	1926	....	....	U.S.A.
1926	....	....	....	1927	....	....	....
1927	....	....	....	1928	....	....	....
1928	....	....	....	

* 110 meters, i.e. 120 yds. 10⁷/₁₀ ins.

RECORDS AND STATISTICS

TABLE I.—continued.

440 YARDS HURDLES.				HIGH JUMP.			
Prior to 1880				Prior to 1880	6 0	M. J. Brooks ('76).	England.
1880	....	....	....	1880	....	....	....
1881	....	....	....	1881	6 0½	P. Davin.	England.
1882	....	....	....	1882	....	....	....
1883	....	....	....	1883	....	....	....
1884	....	....	....	1884	....	....	....
1885	....	....	....	1885	....	....	....
1886	....	....	....	1886	....	....	....
1887	....	....	....	1887	6 4	W. B. Page.	U.S.A.
1888	....	....	....	1888	....	....	....
1889	....	....	....	1889	....	....	....
1890	....	....	....	1890	....	....	....
1891	57½	G. B. Shaw.	England.	1891	....	....	....
1892	....	....	....	1892	....	....	....
1893	....	....	....	1893	....	....	....
1894	....	....	....	1894	....	....	....
1895	....	....	....	1895	6 5½	M. F. Sweeney.	U.S.A.
1896	....	....	....	1896	....	....	....
1897	....	....	....	1897	....	....	....
1898	....	....	....	1898	....	....	....
1899	....	....	....	1899	....	....	....
1900	....	....	....	1900	....	....	....
1901	....	....	....	1901	....	....	....
1902	....	....	....	1902	....	....	....
1903	....	....	....	1903	....	....	....
1904	....	....	....	1904	....	....	....
1905	....	....	....	1905	....	....	....
1906	....	....	....	1906	....	....	....
1907	....	....	....	1907	....	....	....
1908	....	....	....	1908	....	....	....
1909	....	....	....	1909	....	....	....
1910	56½	G. R. L. Anderson.	England.	1910	....	....	....
1911	....	....	....	1911	....	....	....
1912	....	....	....	1912	6 7	T. L. Horine.	....
1913	....	....	....	1913	....	....	....
1914	....	....	....	1914	6 7½	E. Beeson.	U.S.A.
1915	54½	W. H. Meanix.	U.S.A.	1915	....	....	....
1916	....	....	....	1916	....	....	....
1917	....	....	....	1917	....	....	....
1918	....	....	....	1918	....	....	....
1919	....	....	....	1919	....	....	....
1920	54½	J. K. Norton.	U.S.A.	1920	....	....	....
1921	....	....	....	1921	....	....	....
1922	....	....	....	1922	....	....	....
1923	....	....	....	1923	....	....	....
1924	....	....	....	1924	6 8½	H. M. Osborne.	U.S.A.
1925	....	....	....	1925	....	....	....
1926	....	....	....	1926	....	....	....
1927	....	Lord Burghley.	England.	1927	....	....	....
....	52½	J. A. Gibson.	U.S.A.	1928	....	....	....
1928	....	....	....	

ATHLETICS

TABLE I.—*continued.*

LONG JUMP.				POLE JUMP.			
Prior to 1880	22 8	E. Baddeley ('78).	England.	Prior to 1880	10 9	H. E. Kayll ('77).	England.
1880	....	....	....	1880	....	....	....
1881	22 11	P. Davin.	England.	1881	11 3	T. Ray.	England.
1882	....	....	....	1882	....	....	....
1883	23 0½	J. W. Parsons.	U.S.A.	1883	....	....	....
1884	....	....	....	1884	....	....	....
1885	....	....	....	1885	....	....	....
1886	23 3	M. W. Ford.	U.S.A.	1886	....	....	....
1887	....	....	....	1887	11 5	H. H. Baxter.	U.S.A.
1888	....	....	....	1888	....	....	....
1889	....	....	....	1889	....	....	....
1890	23 3½	A. F. Copland.	U.S.A.	1890	....	....	....
1891	23 6½	C. S. Reber.	U.S.A.	1891	....	....	....
1892	....	....	....	1892	11 5½	W. S. Rodenbaugh.	U.S.A.
1893	....	....	....	1893	....	....	....
1894	....	....	....	1894	....	....	....
1895	....	....	....	1895	....	....	....
1896	....	....	....	1896	....	....	....
1897	....	....	....	1897	....	....	....
1898	23 8½	M. Prinstein.	U.S.A.	1898	11 10½	R. G. Clapp.	U.S.A.
1899	24 4½	A. C. Kraenzlein.	U.S.A.	1899	....	....	....
1900	24 7½	M. Prinstein.	U.S.A.	1900	....	....	....
1901	24 11½	P. O'Connor.	Ireland.	1901	....	....	....
1902	....	....	....	1902	....	....	....
1903	....	....	....	1903	....	....	....
1904	....	....	....	1904	12 1½	N. Dole.	....
1905	....	....	....	1905	....	....	....
1906	....	....	....	1906	12 4½	L. R. Samse.	U.S.A.
1907	....	....	....	1907	12 5½	W. R. Dray.	....
1908	....	....	....	1908	12 9½	W. R. Dray.	....
1909	....	....	....	1909	....	....	....
1910	....	....	....	1910	12 10½	L. S. Scott.	....
1911	....	....	....	1911	....	....	....
1912	....	....	....	1912	13 2½	M. S. Wright.	....
1913	....	....	....	1913	....	....	....
1914	....	....	....	1914	....	....	....
1915	....	....	....	1915	....	....	....
1916	....	....	....	1916	....	....	....
1917	....	....	....	1917	....	....	....
1918	....	....	....	1918	....	....	....
1919	....	....	....	1919	13 3½	F. K. Foss.	....
1920	....	....	....	1920	13 5½	F. K. Foss.	Belgium.
1921	25 3	E. O. Gourdin.	U.S.A.	1921	....	....	....
1922	....	....	....	1922	....	....	....
1923	....	....	....	1923	13 9½	C. Hoff.	U.S.A.
1924	25 5½	R. L. Legendre.	France.	1924	13 10	R. Spearow.	U.S.A.
1925	25 10½	D. H. Hubbard.	U.S.A.	1925	13 11½	C. Hoff.	France.
1926	....	....	....	1926	....	....	....
1927	....	....	....	1927	14 0	S. W. Carr.	U.S.A.
1928	25 11½	E. B. Hamn.	U.S.A.	....	14 1	S. W. Carr.	U.S.A.
....	26 0	S. Cator.	France.	1928	14 1½	L. Barnes.	U.S.A.

RECORDS AND STATISTICS

TABLE I.—*continued.*

HOP, STEP AND JUMP.				PUTTING THE WEIGHT.			
Prior to 1880				Prior to 1880	42 5	E. J. Bor.	England.
1880	....	....	....	1880	....	....	....
1881	....	....	....	1881	....	....	....
1882	....	....	....	1882	....	....	....
1883	....	....	....	1883	43 0	F. L. Lambrecht.	U.S.A.
1884	44 1½	M. W. Ford.	U.S.A.	1884	....	....	....
1885	....	....	....	1885	43 0½	D. J. Mackinnon.	England.
1886	....	....	....	1886	....	....	....
1887	....	....	....	1887	43 11	G. R. Gray.	U.S.A.
1888	....	....	....	1888	....	....	....
1889	....	....	....	1889	....	....	....
1890	....	....	....	1890	....	....	....
1891	....	....	....	1891	....	....	....
1892	....	....	....	1892	....	....	....
1893	48 6	E. B. Bloss.	U.S.A.	1893	47 0	G. R. Gray.	U.S.A.
1894	....	....	....	1894	....	....	....
1895	....	....	....	1895	....	....	....
1896	....	....	....	1896	....	....	....
1897	....	....	....	1897	....	....	....
1898	....	....	....	1898	....	....	....
1899	....	....	....	1899	47 1	D. Horgan.	Ireland.
1900	....	....	....	1900	48 2	D. Horgan.	Ireland.
1901	....	....	....	1901	....	....	....
1902	....	....	....	1902	....	R. Rose.	U.S.A.
1903	....	....	....	1903	....	....	....
1904	....	....	....	1904	48 7	R. Rose.	U.S.A.
1905	....	....	....	1905	49 6	W. W. Coe.	U.S.A.
1906	....	....	....	1906	....	....	....
1907	....	....	....	1907	49 7½	R. Rose.	U.S.A.
1908	48 11½	D. F. Ahearn.	U.S.A.	1908	49 10	R. Rose.	U.S.A.
1909	....	....	....	1909	51 0	R. Rose.	U.S.A.
1910	49 7½	D. F. Ahearn.	U.S.A.	1910	....	....	....
1911	50 11	D. F. Ahearn.	U.S.A.	1911	....	....	....
1912	....	....	....	1912	....	....	....
1913	....	....	....	1913	....	....	....
1914	....	....	....	1914	....	....	....
1915	....	....	....	1915	....	....	....
1916	....	....	....	1916	....	....	....
1917	....	....	....	1917	....	....	....
1918	....	....	....	1918	....	....	....
1919	....	....	....	1919	....	....	....
1920	....	....	....	1920	....	....	....
1921	....	....	....	1921	....	....	....
1922	....	....	....	1922	....	....	....
1923	....	....	....	1923	....	....	....
1924	50 11½	A. Winter.	France.	1924	....	....	....
1925	....	....	....	1925	....	....	....
1926	....	....	....	1926	....	....	....
1927	....	....	....	1927	....	....	....
1928	....	....	....	1928	51 9½	E. Hirschfeld.	Germany.
				....	52 0½	J. Kuck.	U.S.A.
				....	52 7½	E. Hirschfeld.	Germany.

ATHLETICS

TABLE I.—*continued.*

THROWING THE HAMMER.				THROWING THE DISCUS.			
Prior to 1880	120 o	S. S. Brown ('74)	England.	Prior to 1880			
1880	....	....	....	7-foot Circle—			
1881	....	....	....	1880	....	....	....
1882	....	....	....	1881	....	....	....
1883	....	....	....	1882	....	....	....
1884	....	....	....	1883	....	....	....
1885	....	....	....	1884	....	....	....
1886	....	....	....	1885	....	....	....
1887	....	....	....	1886	....	....	....
1888	....	....	....	1887	....	....	....
1889	130 o	W. J. M. Barry.	England.	1888	....	....	....
1890	130 8	J. S. Mitchel.	U.S.A.	1889	....	....	....
1891	....	....	....	1890	....	....	....
1892	140 11	J. S. Mitchel.	U.S.A.	1891	....	....	....
1893	....	....	....	1892	....	....	....
1894	....	....	....	1893	....	....	....
1895	....	....	U.S.A.	1894	....	....	....
1896	147 o	J. J. Flanagan.	U.S.A.	1895	....	....	....
1897	150 8	J. J. Flanagan.	U.S.A.	1896	....	....	....
1898	151 10½	J. J. Flanagan.	U.S.A.	1897	118 9	C. H. Henneman.	U.S.A.
1899	164 6	J. J. Flanagan.	U.S.A.	1898	....	....	....
1900	167 4½	J. J. Flanagan.	France.	1899	....	....	....
1901	171 9	J. J. Flanagan.	U.S.A.	1900	....	....	....
1902	....	....	....	1901	120 7½	M. J. Sheridan.	U.S.A.
1903	....	....	....	1902	127 8½	M. J. Sheridan.	U.S.A.
1904	172 11	J. J. Flanagan.	U.S.A.	1903	....	....	U.S.A.
1905	....	....	....	1904	133 6½	M. J. Sheridan.	U.S.A.
1906	....	....	....	1905	....	....	U.S.A.
1907	173 7	M. J. McGrath.	U.S.A.	1906	135 5	M. J. Sheridan.	U.S.A.
1908	....	....	....	1907	136 10	M. J. Sheridan.	U.S.A.
1909	184 4	J. J. Flanagan.	U.S.A.	1908	....	....	....
1910	....	....	....	1909	139 10½	M. J. Sheridan.	U.S.A.
1911	187 4	M. J. McGrath.	U.S.A.	1910	....	....	U.S.A.
1912	....	....	....	1911	141 4½	M. J. Sheridan.	U.S.A.
1913	189 6½	P. J. Ryan.	U.S.A.	1912	145 9½	J. Duncan.	....
1914	....	....	....	8 feet 2½ in.			
1915	....	....	....	Circle—			
1916	....	....	....	1912	156 1½	J. Duncan.	U.S.A.
1917	....	....	....	1913	156 11½	A. Taipale.	Germany.
1918	....	....	....	1914	....	....	....
1919	....	....	....	1915	....	....	....
1920	....	....	....	1916	....	....	....
1921	....	....	....	1917	....	....	....
1922	....	....	....	1918	....	....	....
1923	....	....	....	1919	....	....	....
1924	....	....	....	1920	....	....	....
1925	....	....	....	1921	....	....	....
1926	....	....	....	1922	....	....	....
1927	....	....	....	1923	....	....	....
1928	....	....	....	1924	....	....	....
				1925	157 1½	G. H. Hartnraft.	U.S.A.
				1926	158 1½	C. Houser.	....
				1927	....	....	....
				1928	160 0½	H. Hoffmeister.	Germany.

RECORDS AND STATISTICS

TABLE I.—*continued.*

THROWING THE JAVELIN			
Prior to 1880			
1880	....	..	....
1881	....	....	....
1882	....	..	..
1883	....	..	..
1884	....	..	....
1885	..	....	....
1886	..	....	....
1887	..	....	....
1888	....	....	....
1889	....	....	....
1890	..	....	....
1891	....	....	....
1892	..	..	....
1893	....	....	....
1894	..	....	....
1895	..	....	....
1896	..	....	....
1897	..	....	..
1898	..	....	..
1899	..	..	....
1900	....	..	....
1901	..	..	..
1902	..	..	..
1903	..	..	..
1904	..	..	..
1905	..	....	..
1906	..	....	..
1907	....	....	....
1908	179 10 $\frac{1}{4}$	E. Lemming.	Sweden.
1909	....	....	....
1910	185 2 $\frac{1}{4}$	E. Lemming.	Sweden.
1911	191 2 $\frac{1}{4}$	E. Lemming.	Sweden.
1912	200 1 $\frac{1}{10}$	J. J. Saaristo.	Finland.
....	204 5 $\frac{1}{8}$	E. Lemming.	Sweden.
1913	....	....	....
1914	....	....	....
1915	212 7 $\frac{1}{4}$	J. Myrrha.	Finland.
1916	....	....	....
1917	....	....	....
1918	....	....	....
1919	216 10 $\frac{3}{8}$	J. Myrrha.	Finland.
1920	..	..	....
1921	..	....	..
1922	..	..	..
1923	..	....	....
1924	....	....	..
1925	..	....	....
1926	....	....	....
1927	218 6 $\frac{7}{8}$	G. Lindstrom.	Sweden.
....	229 3 $\frac{1}{4}$	E. Penttila.	Finland.
1928	232 11 $\frac{1}{4}$	E. H. Lundkvist.	Sweden.

TABLE II
SHOWING COMPARATIVE RESULTS OF WINNERS IN TRACK AND FIELD EVENTS
AT THE OLYMPIC GAMES, 1896-1928

Event.	Athens, 1896.	Paris, 1900.	St. Louis, 1904.	London, 1908.	Stockholm, 1912.	Antwerp, 1920.	Paris, 1924.	Amster- dam, 1928.
	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.
100 Metres	12	10 $\frac{1}{4}$	11	10 $\frac{3}{8}$	10 $\frac{1}{8}$	10 $\frac{3}{8}$	10 $\frac{3}{8}$	10 $\frac{1}{4}$
200 Metres	....	22 $\frac{1}{8}$	21 $\frac{3}{8}$	22 $\frac{3}{8}$	21 $\frac{7}{16}$	22	21 $\frac{3}{8}$	21 $\frac{1}{4}$
400 Metres	54 $\frac{1}{8}$	49 $\frac{3}{8}$	49 $\frac{1}{8}$	50	48 $\frac{1}{8}$	49 $\frac{3}{8}$	47 $\frac{3}{8}$	47 $\frac{1}{8}$
800 Metres	2 11	2 1 $\frac{3}{8}$	1 56	1 52 $\frac{1}{4}$	1 51 $\frac{9}{16}$	1 53 $\frac{3}{8}$	1 52 $\frac{3}{8}$	1 51 $\frac{1}{4}$
1500 Metres	4 33 $\frac{1}{8}$	4 6	4 5 $\frac{3}{8}$	4 3 $\frac{3}{8}$	3 56 $\frac{1}{8}$	4 1 $\frac{1}{4}$	3 53 $\frac{1}{8}$	3 53 $\frac{1}{8}$
110 Metres (Hurdles)	17 $\frac{3}{8}$	15 $\frac{3}{8}$	16 $\frac{1}{8}$	15	15 $\frac{1}{8}$	14 $\frac{3}{8}$	15	14 $\frac{1}{8}$
400 Metres (Hurdles)	....	57 $\frac{3}{8}$	58	55	....	54	52 $\frac{3}{8}$	53 $\frac{3}{8}$
High Jump	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.	Ft. Ins.
Long Jump	5 11 $\frac{1}{4}$	6 2 $\frac{1}{8}$	5 11	6 3	6 4	6 4 $\frac{3}{8}$	6 6	6 4 $\frac{1}{4}$
Pole Jump	20 9 $\frac{1}{4}$	23 6 $\frac{1}{8}$	24 1	24 6 $\frac{1}{2}$	24 11 $\frac{1}{8}$	23 5 $\frac{5}{8}$	24 6	25 4 $\frac{1}{4}$
Hop, Step and Jump	10 9 $\frac{1}{4}$	10 9 $\frac{9}{16}$	11 6	12 2	12 11 $\frac{1}{8}$	13 5	12 11 $\frac{1}{8}$	13 9 $\frac{1}{2}$
Putting the Weight	45 0	47 4 $\frac{1}{8}$	47 0	48 11 $\frac{1}{4}$	48 5 $\frac{1}{2}$	47 7	50 11 $\frac{5}{16}$	49 11
Throwing the Hammer	36 2	46 3 $\frac{1}{8}$	48 7	46 7 $\frac{1}{2}$	50 4	48 7 $\frac{1}{8}$	49 2 $\frac{1}{4}$	52 0 $\frac{3}{4}$
Throwing the Discus	....	167 4	168 1	170 4 $\frac{1}{2}$	179 7 $\frac{1}{8}$	173 5 $\frac{5}{8}$	174 10 $\frac{1}{4}$	168 7 $\frac{1}{2}$
Throwing the Javelin	95 7 $\frac{1}{8}$	118 2 $\frac{9}{16}$	128 10 $\frac{1}{2}$	134 2	148 3 $\frac{1}{16}$	146 7	151 5 $\frac{1}{4}$	155 3
	....	....	....	179 10 $\frac{1}{2}$	198 11 $\frac{1}{4}$	215 9 $\frac{1}{2}$	206 6 $\frac{1}{4}$	218 6 $\frac{1}{4}$

TABLE III

SHOWING COMPARATIVE RECORDS OF THE WORLD AND SIX OF THE LEADING NATIONS

Event.	World's.	Olympic.	British.	American. (Outdoor.)	Finnish.	French.	German.	Swedish.
	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.	Min. Sec.
100 Yards	9 ³ / ₁₆	10 ³ / ₈	9 ⁷ / ₁₆	9 ³ / ₁₆	10 ¹ / ₈	10 ¹ / ₈	10 ³ / ₈	10 ¹ / ₈
100 Metres	10 ³ / ₈	10 ³ / ₈	10 ³ / ₈	10 ³ / ₈	10 ³ / ₈	10 ³ / ₈	10 ³ / ₈	10 ³ / ₈
220 Yards	20 ³ / ₈	21 ³ / ₈	21 ¹ / ₈	20 ³ / ₈	22 ³ / ₈	21 ³ / ₈	20 ³ / ₈	21 ³ / ₈
200 Metres	20 ³ / ₈	21 ³ / ₈	21 ¹ / ₈	20 ³ / ₈	22 ³ / ₈	21 ³ / ₈	20 ³ / ₈	21 ³ / ₈
440 Yards	47 ³ / ₈	47 ³ / ₈	48 ³ / ₈	47 ³ / ₈	49 ³ / ₈	48 ³ / ₈	47 ³ / ₈	48 ³ / ₈
400 Metres	47 ³ / ₈	47 ³ / ₈	47 ³ / ₈	47 ³ / ₈	49 ³ / ₈	48 ³ / ₈	47 ³ / ₈	48 ³ / ₈
880 Yards	1 51 ³ / ₈	1 51 ³ / ₈	1 51 ³ / ₈	1 52 ³ / ₈	1 52 ³ / ₈	1 51 ³ / ₈	1 51 ³ / ₈	1 52 ³ / ₈
800 Metres	1 50 ³ / ₈	1 51 ³ / ₈	1 51 ³ / ₈	1 52 ³ / ₈	1 52 ³ / ₈	1 51 ³ / ₈	1 51 ³ / ₈	1 52 ³ / ₈
1500 Metres	3 51	3 53 ¹ / ₈	3 53 ¹ / ₈	3 53 ¹ / ₈	3 53 ¹ / ₈	3 53 ¹ / ₈	3 51	3 51 ¹ / ₈
1 Mile	4 10 ³ / ₈	4 10 ³ / ₈	4 10 ³ / ₈	4 12 ³ / ₈	4 12 ³ / ₈	4 12 ³ / ₈	4 12 ³ / ₈	4 13 ¹ / ₈
3 Miles	14 11 ¹ / ₈	14 11 ¹ / ₈	14 11 ¹ / ₈	14 22 ³ / ₈	14 22 ³ / ₈	14 22 ³ / ₈	14 22 ³ / ₈	14 22 ³ / ₈
5000 Metres	14 28 ¹ / ₈	14 31 ¹ / ₈	14 31 ¹ / ₈	14 22 ³ / ₈	14 35 ¹ / ₈	14 36 ¹ / ₈	15	14 40 ³ / ₈
10000 Metres	30 6 ¹ / ₈	30 18 ¹ / ₈	30 18 ¹ / ₈	30 40 ¹ / ₈	30 40 ¹ / ₈	30 58 ¹ / ₈	32 0 ¹ / ₈	30 55 ¹ / ₈
10 Miles	50 15	50 15	50 15	51 3 ¹ / ₈	50 15	50 46	54	50 46
120 Yards (Hurdles)	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈
110 Metres (Hurdles)	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈	14 ³ / ₈
440 Yards (Hurdles)	52 ³ / ₈	52 ³ / ₈	54	52 ³ / ₈	54 ³ / ₈	54	54 ³ / ₈	52 ³ / ₈
400 Metres (Hurdles)	52	53 ³ / ₈	54	52 ³ / ₈	54 ³ / ₈	54	54 ³ / ₈	52 ³ / ₈
High Jump	6 8 ¹ / ₈	6 6	6 5	6 8 ¹ / ₈	6 3	6 4 ³ / ₈	6 3 ³ / ₈	6 4 ³ / ₈
Long Jump	25 11 ¹ / ₈ (a)	25 9 ³ / ₈	25 1	25 11 ¹ / ₈	23 11 ¹ / ₈	23 4 ³ / ₈	25 1 ¹ / ₈	24 8
Pole Jump	14 1 ¹ / ₈	13 9 ³ / ₈	13 9	14 1 ¹ / ₈	12 1 ¹ / ₈	12 9 ³ / ₈	12 6 ¹ / ₈	13 1 ¹ / ₈
Hop, Step and Jump	50 11 ¹ / ₈	50 11 ¹ / ₈	50 9	50 11	50 10	49 6 ¹ / ₈	49 2 ¹ / ₈	49 3 ¹ / ₈
Putting the Weight	52 0 ³ / ₈ (b)	52 0 ³ / ₈	49 10 ¹ / ₈	51 0	50 10	44 6 ¹ / ₈	52 7 ³ / ₈	49 3 ¹ / ₈
Throwing the Hammer	189 6 ¹ / ₈	179 7 ¹ / ₈	178 11	189 6 ¹ / ₈	156 0 ¹ / ₈	138 9 ³ / ₈	151 1	176 7 ¹ / ₈
Throwing the Discus	158 1 ¹ / ₈ (c)	155 3	147 0	158 1 ¹ / ₈	144 6 ¹ / ₈	148 2 ³ / ₈	160 0 ¹ / ₈	150 2
Throwing the Javelin	232 11 ¹ / ₈	218 6 ¹ / ₈	222 9	212 5	229 3 ¹ / ₈	201 2 ³ / ₈	211 11 ¹ / ₈	232 11 ¹ / ₈

* A better record exists for an indoor meet.

† 47 on straight track.

‡ Made in Olympic Games.

|| 25 ft. 6 ins. in Pentathlon.

(c) 160.0¹/₈ not yet accepted.

(a) 26.0 not yet accepted.

(b) 52.7¹/₈ not yet accepted.

ATHLETICS

TABLE IV

COMPARATIVE TABLE OF METRES AND YARDS, AND RELATIVE TIMES AND SPEEDS

A. Common distances :—

Metres.		Yards.
100	=	109·36
110	=	120·30
200	=	218·72
400	=	437·45
800	=	874·89
1500	=	1640·42 (<i>i.e.</i> 119·58 yds. short of 1 mile)
1600	=	1749·72 (<i>i.e.</i> 10·22 yds. short of 1 mile ; common relay event, 4 × 400 metres)
5000	=	5468·07 (<i>i.e.</i> 3 miles 188 yards)
10000	=	6 miles 276 yards

B. Relative times :—

As will be observed, the 110 metres hurdles corresponds almost exactly with the 120 yards hurdles as run in England and America. It is also possible to contrast times for the 220 yards flat with the 200 metres as run on the Continent and in the Olympic Games. But over longer distances greater adjustments have to be made when effecting comparisons between, say, British and French times. Thus :

The corresponding time for 440 yards is obtained by adding about $\frac{3}{10}$ of a second to that taken for 400 metres, and, of course, *vice versa*, by subtraction.

For 880 yards by adding about $\frac{7}{10}$ of a second to the time for 800 metres.

For 1 mile by adding about $\frac{3}{4}$ 1sts of the time for 1500 meters : *e.g.* 4 minutes for 1500 metres represents 4 minutes 17 $\frac{1}{2}$ seconds for 1 mile ; 3·53 $\frac{1}{2}$ (Olympic record) represents 4 minutes 10 $\frac{1}{2}$ seconds (world's record being 4 minutes 10 $\frac{3}{4}$ seconds) ; 4·30 represents 4 minutes 50 seconds, etc.

For 3 miles by subtracting about $\frac{2}{55}$ ths of the time taken for 5000 metres (188 yards more than 3 miles) : *e.g.* 15 minutes 1 second for 5000 metres represents 14 minutes 30 seconds for 3 miles.

C. Pace :—

It may be of interest to notice the actual speed in yards per second of various performances. It is surely rather wonderful, and indeed somewhat curious, that a man can run at a speed in excess of the legal speed limit in England ; and it is apparent that before long some one will run 12 miles within the hour, and we believe that Nurmi is capable of this feat.

RECORDS AND STATISTICS

TABLE IV.—*continued.*

Distance.	Time.	Average Speed.		World's Records.
		Yds. per second.	Miles per hour.	
Yds.	M. S.			
100	10	10	20 $\frac{1}{4}$	
....	9 $\frac{3}{8}$	10 $\frac{5}{12}$	21 $\frac{1}{8}$	9 $\frac{3}{8}$ secs. is world's record, held by C. W. Paddock and four others.
440	48 $\frac{0}{10}$	9	18 $\frac{1}{4}$	
	47 $\frac{3}{8}$	9 $\frac{1}{4}$	19	47 $\frac{3}{8}$ secs. is J. E. Meredith's world's record.
880	2 0	7 $\frac{1}{8}$	15	
	1 52	7 $\frac{1}{8}$	16	Dr. O. Peltzer's world's record is 1 min. 51 $\frac{3}{8}$ secs.
1 mile	4 30	6 $\frac{1}{2}$	13 $\frac{1}{8}$	
	4 10	7	14 $\frac{1}{8}$	Nurmi's world's record is 4 min. 10 $\frac{3}{8}$ secs.
11 miles 1648 yds.	} 1 hour	....	....	Nurmi's record, made 7th October 1928.

D. Comparative tables :—

1 centimetre = $\frac{1}{3937}$ inches ($\frac{25}{104}$ in.) ; 1 metre = 3.28 feet (3 ft. 3 $\frac{3}{8}$ ins.) or 1.09 yds.

1 inch = 2.54 cm. or .0254 metres ; 1 foot = .3048 metres ; 1 yard = .9144 metres.

HIGH JUMP.		LONG JUMP.		POLE JUMP.	
Ft.	Metres.	Ft.	Metres.	Ft.	Metres.
5.3	1.60	20	6.095	10	3.05
5.5	1.65	21	6.401	11	3.35
5.6	1.676	21.6	6.553	12	3.66
5.7	1.702	22	6.705	12.6	3.81
5.8	1.727	22.6	6.857	12.9	3.89
5.9	1.753	22.9	6.934	13	3.96
5.10	1.778	23	7.01	13.3	4.04
5.11	1.803	23.3	7.086	13.6	4.12
6.0	1.829	23.6	7.163	13.9	4.19
6.1	1.854	23.9	7.239	14	4.27
6.2	1.88	24	7.315	14.3	4.34
6.3	1.905	24.3	7.392	14.6	4.42
6.4	1.93	24.6	7.468		
6.5	1.956	24.9	7.544		
6.6	1.98	25	7.62		
6.7	2.006	25.3	7.697		
6.8	2.032	25.6	7.773		
6.9	2.057	25.9	7.849		
		26.	7.926		
		26.3	8.002		

ATHLETICS

TABLE IV.—*continued.*

HOP, STEP AND JUMP; PUTTING THE WEIGHT.			THROWING THE HAMMER, DISCUS AND JAVELIN.		
Metres.		Ft. Ins.	Metres.		Ft. Ins.
14	=	45 11 $\frac{1}{4}$	45	=	147 7 $\frac{1}{2}$
14.50	=	47 7	50	=	164 0 $\frac{1}{2}$
15	=	49 2 $\frac{1}{2}$	55	=	180 5 $\frac{3}{4}$
15.20	=	49 10 $\frac{1}{2}$	60	=	196 10 $\frac{1}{4}$
15.40	=	50 6 $\frac{1}{4}$	65	=	213 6 $\frac{1}{2}$
15.60	=	51 2 $\frac{1}{4}$	70	=	229 8
15.80	=	51 9 $\frac{7}{8}$	75	=	246 0 $\frac{3}{4}$
16	=	52 6	80	=	262 5 $\frac{1}{4}$

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